SUPERMICRO®

SUPERMICRO® X7DCT-L
SUPERMICRO® X7DCT-LF
SUPERMICRO® X7DCT-3
SUPERMICRO® X7DCT-3F
SUPERMICRO® X7DCT-3IBXF

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

Release Date: Jan. 5, 2009

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERMICRO X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF motherboard.

About This Motherboard

The SUPERMICRO X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF motherboard supports dual Intel® Xeon™ Dual-Core 5400/5300/5200/5100 Series processors with a front side bus speed of up to 1.333 GHz. With dual 64-bit Xeon Dual-Core LGA 771 processors built-in, this motherboard offers substantial functionality enhancements to the motherboards based on the Intel Core™ microarchitecture while remaining compatible with the IA-32 software. With twin-platfom design, optional InfiniBand and SAS connections build-in, he X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF provides the performance and feature set required for dual processor-based high-end computer systems with configuration options optimized for intensive computing, high energy-efficiency and High-performance computing (HPC) applications. This motherboard is ideal for intense processing in High-performance computing (HPC) environments. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/products/motherboard/) for updates. This product is intended to be installed and serviced by professional technicians.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to the BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS POST Error Codes. **Appendix B** and **Appendix C** list the Windows OS and Other Software Programs Installation Instructions.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury.

Warning: Important information given to ensure proper system installation or to prevent damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Chapter 1

Introduction

1-1 Overview

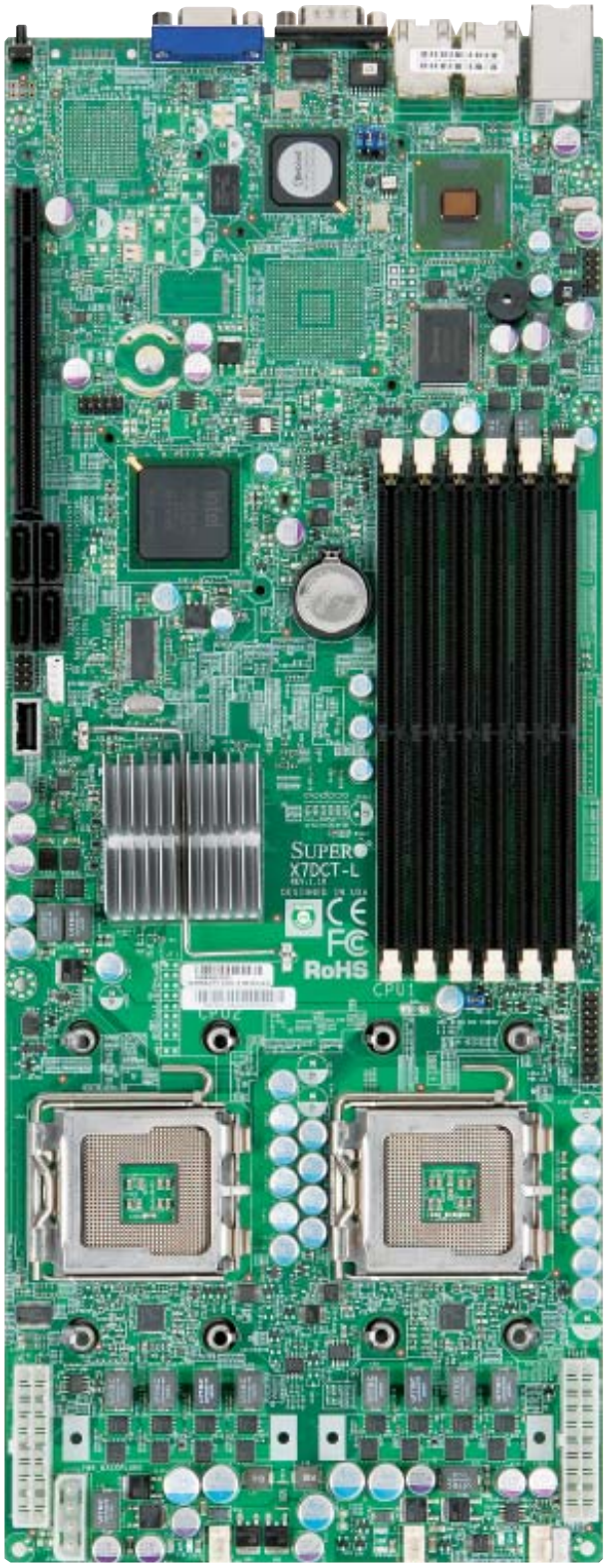
Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

All the following items are included in the retail box.

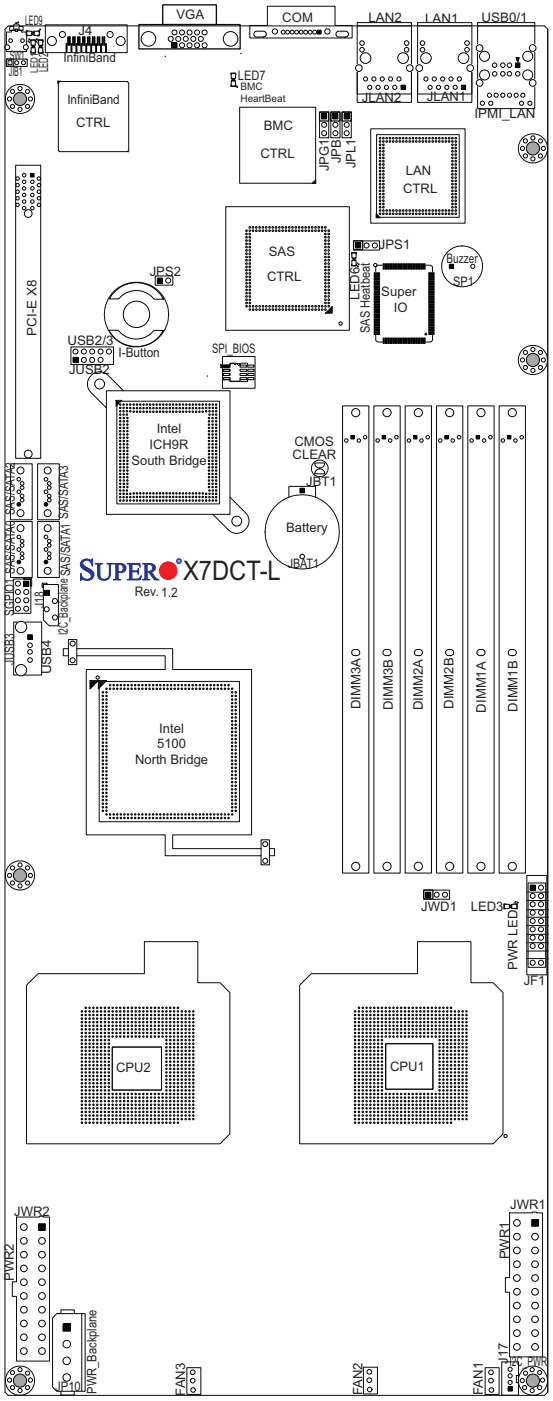
- One (1) Supermicro Mainboard
- Two (2) SATA cables (CBL-0044L)
- One (1) Supermicro CD containing drivers and utilities
- One (1) User's/BIOS Manual

SUPER® X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF Image



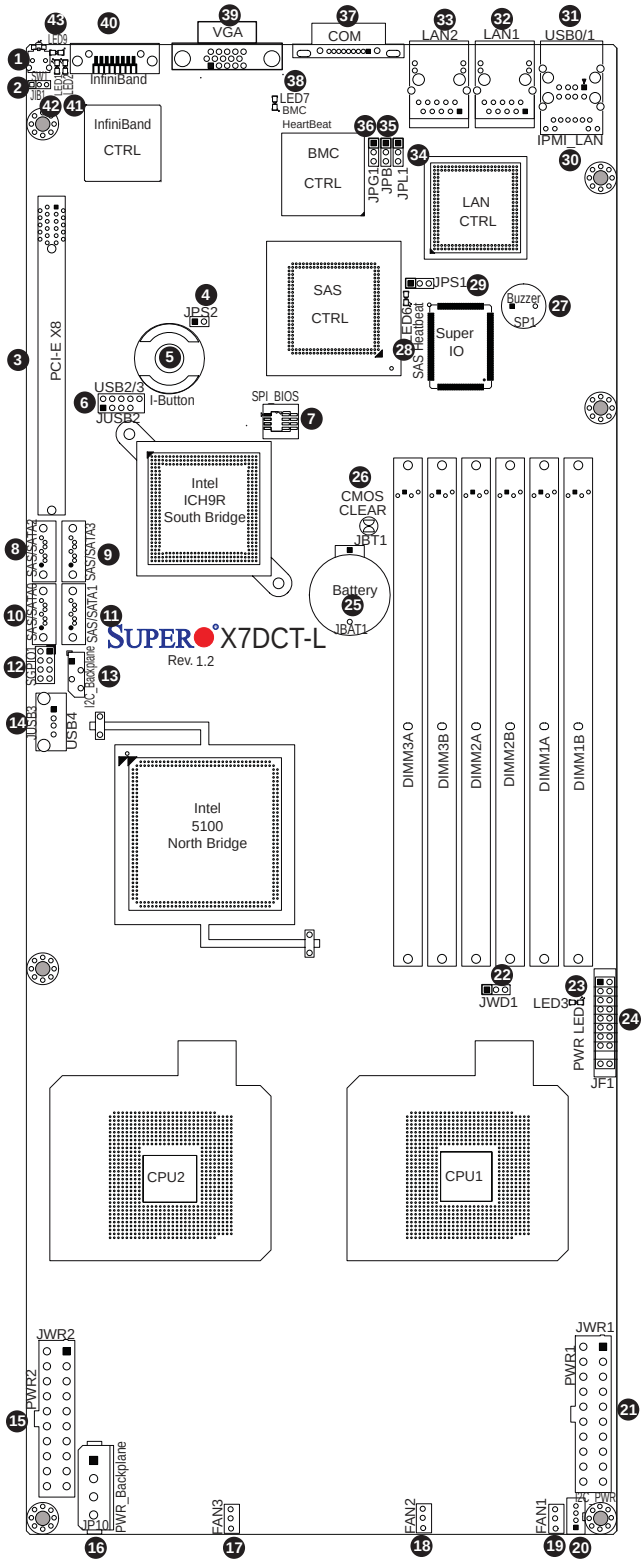
Note: The drawings and pictures shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.

Motherboard Layout



Notes:

1. Jumpers not indicated are for test purposes only.
2. See Chapter 2 for details on jumpers, I/O ports and JF1 front panel connections. Refer to the Table on Page 1-4 for differences between the models.
3. "■" indicates the location of Pin 1.
4. When LED3 is on, make sure to unplug the power cable before removing or installing components.
5. InfiniBand Connector is available on the X7DCT-3IBXF only.



Differences between X7DCT-L/-LF/-3/-3F/-3IBXF

	X7DCT-L	X7DCT-LF	X7DCT-3	X7DCT-3F	X7DCT-3IBXF
SATA from ICH9R	Yes	Yes	No	No	No
SAS/LSI 1064E	No	No	Yes	Yes	Yes
IPMI 2.0/KVM	No	Yes	No	Yes	Yes
InfiniBand	No	No	No	No	Yes

X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF Quick Reference

Jumper	Label	Description	Default Setting
JBT1	#26	CMOS Clear	(See Chapter 2)
JIB1 (-3IBXF)	#2	InfiniBand (IB) Enable	Pins 1-2 (Enabled)
JPL1	#34	GLAN1/2 Enable	Pins 1-2 (Enabled)
JPB (-LF/3F/IBXF)	#35	BMC Enable	Pins 1-2 (Enabled)
JPG1	#36	VGA Enable	Pins 1-2 (Enabled)
JPS1(-3/-3IBXF)	#29	SAS Enable	Pins 1-2 (Enabled)
JPS2(-3/-3IBXF)	#4	SAS Mode Select	On (SR RAID)
JWD1	22	Watch Dog	Pins 1-2 (Reset)

Connector	Label	Description
Battery	#25	Onboard Battery
COM	#37	COM (Serial) Port
FAN 1-3	#19,18,17	Chassis/System/CPU Fans
IB (-3IBXF)	#40	InfiniBand Connector (J4)
I-Button	#5	I-Button for Mega-RAID Operation
I^2C_PWR	#20	Power_SMB I^2C Header
I^2C_Backplane	#13	Power_SMB I^2C Header for the backplane
JF1	#24	Front Panel Control Connector
IPMI LAN	#30	IPMI LAN Port (X7DCT-LF/-3F/-3IBXF) (Note 3)
LAN1/2	#32,33	Gigabit Ethernet (RJ45) Ports 1~2
PWR1	#21	Primary 20-Pin Power Connector (JWR1) (Note 1)
PWR2 (Note 1)	#15	Secondary 20-Pin PWR Connector (JWR2)(Note1)
PWR_Back-plane	#16	4-pin Backplane PWR output to HDDs (Note 2)
SATA 0~3	#10,11,8,9	Intel ICH9R SATA Ports 0~3 (X7DCX-L/-LF)
SAS 0~3	#10,11,8,9	LSI SAS Ports 0~3 (X7DCX-3/-3F/3IBXF) (Note 4)
SGPIO	#12	Serial General Purpose I/O Header (J7)
SP1	#27	Internal Speaker/Buzzer
SPI BIOS	#7	SPI BIOS chip
SW1	#1	Unit Identification Switch
USB 0~1	#31	Back Panel USB Ports #0~1
USB 2~3, 4	#6, 14	Front Panel/Embedded USB Headers#2~3, #4
VGA	#39	VGA Connector

LED Indicator	Label	Description	Status
LED1 (-3IBXF)	#42	InfiniBand Link LED	Green: On (Normal)
LED2 (-3IBXF)	#41	IB Activity LED	Yellow: Blinking (Active)
LED3	#23	Onboard Power LED	Green: On (PWR On)
LED6 (-3/-3IBXF)	#28	SAS Heartbeat LED	Green: Blinking (Normal)
LED7	#38	BMC Heartbeat LED	Green: Blinking (Normal)
LED9	#43	UID (Unit ID) LED	Blue: Blinking (Unit Identified)

Note 1: Do not use both right and left 20-pin power connectors (PWR1 and PWR2) for power input to the motherboard at the same time. Only one connector can be used for input. For proper use of these proprietary power connectors, please customize your power cables based on the Power Connector Pin-Out Definitions listed on Page 2-15.

Note 2: The 4-pin Auxiliary PWR_Backplane Connector is used as a power output to the HDDs only. Refer to Pages 2-15, 2-16 for more information on power connectors.

Note 3: For more information on IPMI configuration, please refer to the Embedded IPMI User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.

Note 4: For more information on the LSI SAS MegaRAID configuration, please refer to the LSI MegaRAID User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.

Notes

Motherboard Features

CPU

- Dual Intel 64-bit Xeon LGA 771 Dual-Core 5400/5300/5200/5100 Series processors at a front side bus speed of 1333 MHz or 1066 MHz

Memory

- Six 240-pin DIMM sockets with support up to 48 GB ECC Buffered (Registered) DDR2 667/533 Memory (See Section 2-4 in Chapter 2 for DIMM Slot Population.)

Chipset

- Intel 5100 chipset, including: the 5100 Memory Control Hub (MCH), and the ICH9R South Bridge

Expansion Slots

- One PCI-Exp. x16 slot (with x8 signals)

BIOS

- 4 MB SPI Phoenix® Flash ROM*
- DMI 2.3, PCI 2.2, ACPI 1.0/2.0/3.0, Plug and Play (PnP), USB Keyboard support, and Hardware BIOS Virus Protection

Note: The onboard SPI BIOS chip is not removable. To repair or replace the onboard BIOS chip, please return the motherboard to Supermicro for service. (Email: rma@supermicro.com)

PC Health Monitoring

- Onboard voltage monitors for CPU core voltage, Memory voltage, Chipset voltage, +3.3V, +3.3V standby, +5V, +12V, +5V standby and VBAT)
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Low noise fan speed control
- CPU fan auto-off in sleep mode
- Pulse Width Modulation (PWM) fan control
- I^2C temperature sensing logic
- Thermal Monitor 2 (TM2) support
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection
- Power-up mode control for recovery from AC power loss
- PECI (Platform Environment Configuration Interface) support
- System resource alert via Supero Doctor III

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Power-on mode for power recovery

Onboard I/O

- Intel 82575 LAN chip supports two Giga-bit LAN ports
- One COM port
- Intel ICH9R supports four SATA ports (with support of RAID 0, 1,10 and 5 in the Windows OS environment; RAID 0, 1 and 10 in Unix) (X7DCT-L/X7DCT-LF) (Note 1)
- LSI 1064E SAS Controller supports four onboard SAS ports (X7DCT-3/X7DCT-3F/X7DCT-3IBXF)
- IPMI 2.0 with KMV supported by the Winboand WPCM450 Baseboard Management Controller (X7DCT-LF/X7DCT-3F/X7DCT-3IBXF) (Note 2)
- Up to five USB 2.0 (Universal Serial Bus) (three ports: two on the backpanel, one for front access, and an additional header with two connections to provide front access)
- Super I/O: Winbond W83627DHG-P
- One InfiniBand Connector (X7DCT-3IBXF only)
- Matrox G200EW Graphics Controller

Other

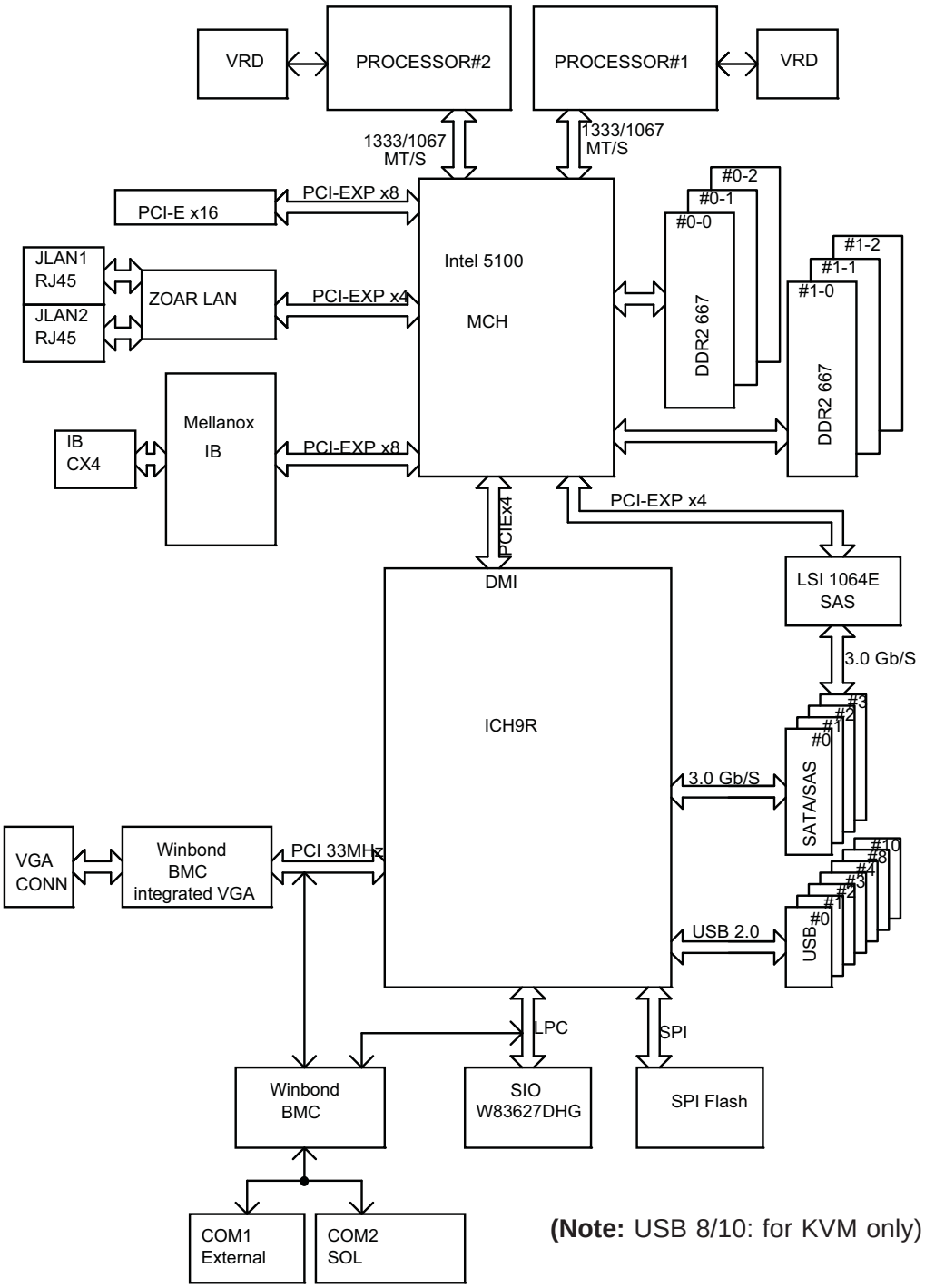
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS
- CD/Diskette Utilities
- BIOS flash upgrade utility and device drivers

Dimensions

- Proprietary 16.4" (L) x 6.5" (W) (416.6 mm x 165.1 mm)

Note 1: For more information on IPMI configuration, please refer to the Embedded IPMI User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.

Note 2: For more information on the LSI SAS MegaRAID configuration, please refer to the LSI MegaRAID User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.



(Note: USB 8/10: for KVM only)

Block Diagram

Note: This is a general chipset block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

1-2 Chipset and Processor Features Overview

Built upon the functionality and the capability of the Intel 5100 chipset, the X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF motherboard provides the performance and feature set required for dual processor-based high-end computer systems with configuration options optimized for intensive computing, high energy-efficiency and High-performance computing (HPC) applications. The 5100 chipset supports single or dual Intel Xeon 64-bit Dual-Core 5400/5300/5200/5100 Series processors with front side bus speeds of up to 1.333 GHz. The chipset consists of the 5100 Memory Controller Hub (MCH), Intel I/O Controller Hub (ICH9R) and the I/O subsystem.

The 5100 Memory Controller Hub (MCH)

The Intel 5100 MCH chip is designed for symmetric multiprocessing across two independent front side bus interfaces. Each front side bus uses a 64-bit wide, 1333/1066 MTS data bus capable of transferring data at 10.6/8.5 GB/s for a total bandwidth of 17/21.3 GB/s. The MCH supports a 36-bit wide address bus and up to six DDR2 667 MHz/533 MHz Registered DIMM modules, providing a total memory capacity of up to 48 GB.

The 5100 MCH also provides one x16 interfaces and one x4 DMI Interface to the ICH9R. Each PCI Express port on the MCH provides 4 GB/s bi-directional bandwidth.

The Ninth Generation I/O Controller Hub (ICH9R)

The I/O Controller ICH9R provides the data buffering and interface arbitration required for the system to operate efficiently. It also provides the bandwidth needed for the system to maintain its peak performance. The Direct Media Interface (DMI) provides the connection between the MCH and the ICH9R. The ICH9R supports up to three PCI-Express x1 connections, one PCI connection, four Serial ATA ports and five USB 2.0 ports. In addition, the ICH9R offers the Intel Matrix Storage Technology which provides various RAID options for data protection and rapid data access. It also supports next generation of client management through the use of PROActive technology in conjunction with Intel's next generation Gigabit Ethernet controllers.

1-3 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power- on state. See the Power Lost Control setting in the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Voltage Monitoring

An onboard voltage monitor will scan the CPU Core, Memory, +3.3V, +5V, +12V, +3.3V Standby and VBAT voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem. You can also configure Supero Doctor to provide you with warnings when the system temperature goes beyond a pre-defined range.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP, Windows Vista and Windows 2003 Servers operating systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When a power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF can only accommodate Supermicro proprietary power supply. Please refer to Note 1, Note 2 on Page 1-5 in Chapter 1 and Section 2-5 in Chapter 2for detailed information.

1-7 Overview of the Winbond WPCM450 Controller (X7DCT-LF/X7DCT-3F/X7DCT-3IBXF only)

The Winbond WPCM450, a Baseboard Management Controller (BMC), supports the 2D/VGA-compatible Graphics Core with the PCI interface, Virtual Media, and Keyboard/Video/Mouse (KVM) Redirection modules.

The WPCM450 BMC interfaces with the host system via a PCI interface to communicate with the graphics core. It supports USB 2.0 and 1.1 for remote keyboard/mouse/virtual media emulation. It also provides LPC interface to control Super IO functions. The WPCM450 is connected to the network via an external Ethernet PHY module.

The WPCM450 communicates with onboard components via six SMBus interfaces, fan control, Platform Environment Control Interface (PECI) buses, and General Purpose I/O (3SGPIO) ports.

The WPCM450 also includes the following features:

- One X-Bus parallel interface for expansion I/O connections
- Three ADC inputs, Analog and Digital Video outputs
- Two serial for boundary scan and debug

Note: For more information on IPMI configuration, please refer to the Embedded IPMI User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electro-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

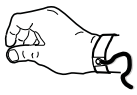
Precautions

- Use a grounded wrist strap designed to prevent static discharge. (See graphics below.)
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Anti-Static Wrist Strap

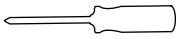


2-2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray.

Note: Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.

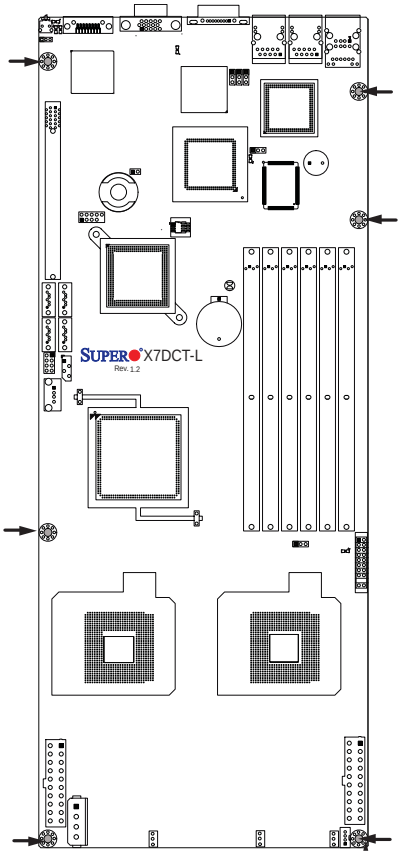
Tools Needed

- Phillips Screwdriver 
- Pan head #6 screws

Installation Instructions

1. Locate the mounting holes on the motherboard. Refer to the layout on the right for mounting hole locations.
2. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.
3. Place Standoffs on the chassis as needed.
4. Insert a Pan-head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis, using a Phillips screwdriver.

Locations of Mounting Holes



Warning: To avoid damaging the motherboard and its components, please do not apply any force greater than 8 lbs per inch (8 lb/in.) when installing a screw into a mounting hole.

5. Repeat Step 4 to insert #6 screws to all mounting holes.
6. Make sure that the motherboard is securely placed on the chassis.

2-3 Processor and Heatsink Fan Installation

Warning: When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

1. Always connect the power cord last and always remove it before adding, removing or changing any components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

2. Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.

3. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.

4. When purchasing a motherboard with an LGA 771 CPU Socket, make sure that the CPU plastic cap is in place, and none of the CPU Socket pins are bent; otherwise, contact the retailer immediately.

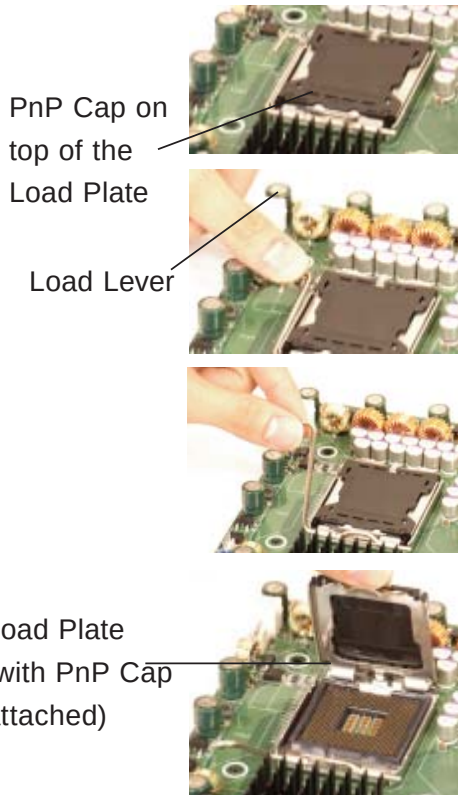
5. Refer to the Chipset/MB Features Section for more details on CPU support.

Installing the LGA771 Processor

1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.

2. Gently lift the load lever to open the load plate.

3. Use your thumb and your index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.



Loading the Processor into the Socket

1. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

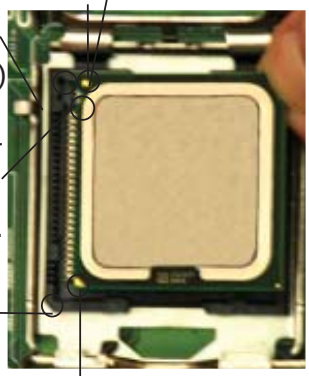
2. Align the CPU key that is the semi-circle cutout below a gold dot against the socket key, the notch on the same side of the triangle cutout on the socket.

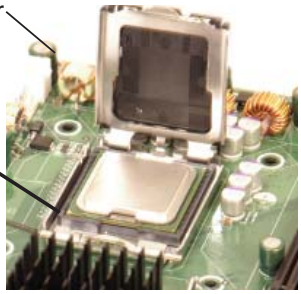
3. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

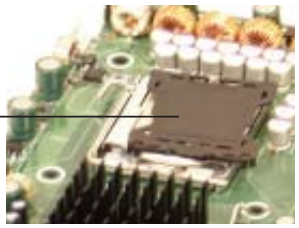
4. With the CPU installed in the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed. Then, close the load plate.

5. Use your thumb to gently push the load lever down to lock it.

6. If the CPU is properly installed into the socket, the plastic cap will be automatically released from the load plate when the clip is pushed in the clip lock. Remove the plastic cap from the motherboard.







Warning: Please save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.

Installing the Heatsink

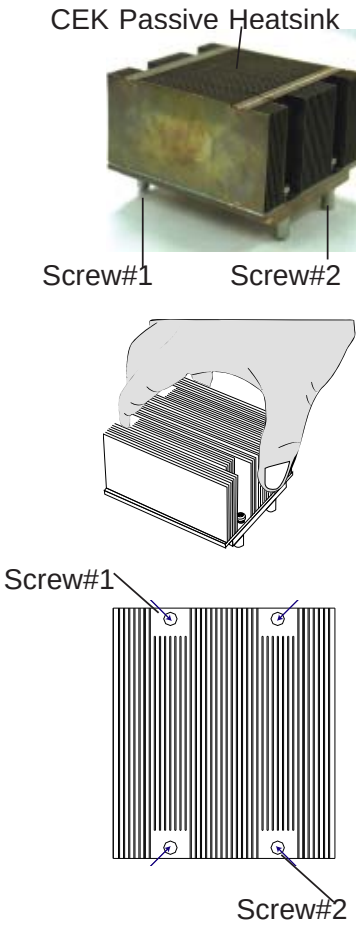
CEK Heatsink Installation

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.)

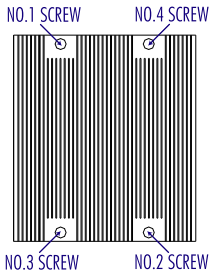
4. Finish the installation by fully tightening all four screws.



Removing the Heatsink

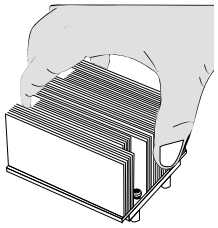
Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions on the next page to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as shown in the picture on the right.



2. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loosened, remove the heatsink from the CPU socket.



4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

2-4 Installing DIMMs

Warning! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance. (See Memory Support below.)

DIMM Installation

Insert a desired number of modules into slots. (A minimum of two modules is required.) Gently press down on a module until it snaps into place in the slot. The memory scheme is interleaved, so you must install two modules at a time, beginning with DIMM 1A and DIMM 1B, DIMM 2A and DIMM 2B, then DIMM 3A, DIMM 3B.

Memory Support

The X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF supports up to 48 GB ECC Registered DDR2 667/533 in 6 DIMMs. Populating memory slots of the same bank with a pair of memory modules of the same size and same type **will result in two-way Interleaved Memory** which will improve memory performance. See the table below.

Optimized DIMM Population Configurations						
2DIMMs	DIMM1A	------	------	DIMM1B	------	------
4DIMMs	DIMM1A	DIMM2A	------	DIMM1B	DIMM2B	------
6DIMMs	DIMM1A	DIMM2A	DIMM3A	DIMM1B	DIMM2B	DIMM3B
(**Notes: i.** DIMM slot# specified: DIMM slot to be populated; "---": DIMM slot not to be populated. **ii.** Both 533 MHz and 667MHz DIMMs are supported; however, you need to use the memory modules of the same speed and of the same type on a motherboard. **iii.** For memory to work properly, you need to follow the restrictions listed above.)						

Notes:

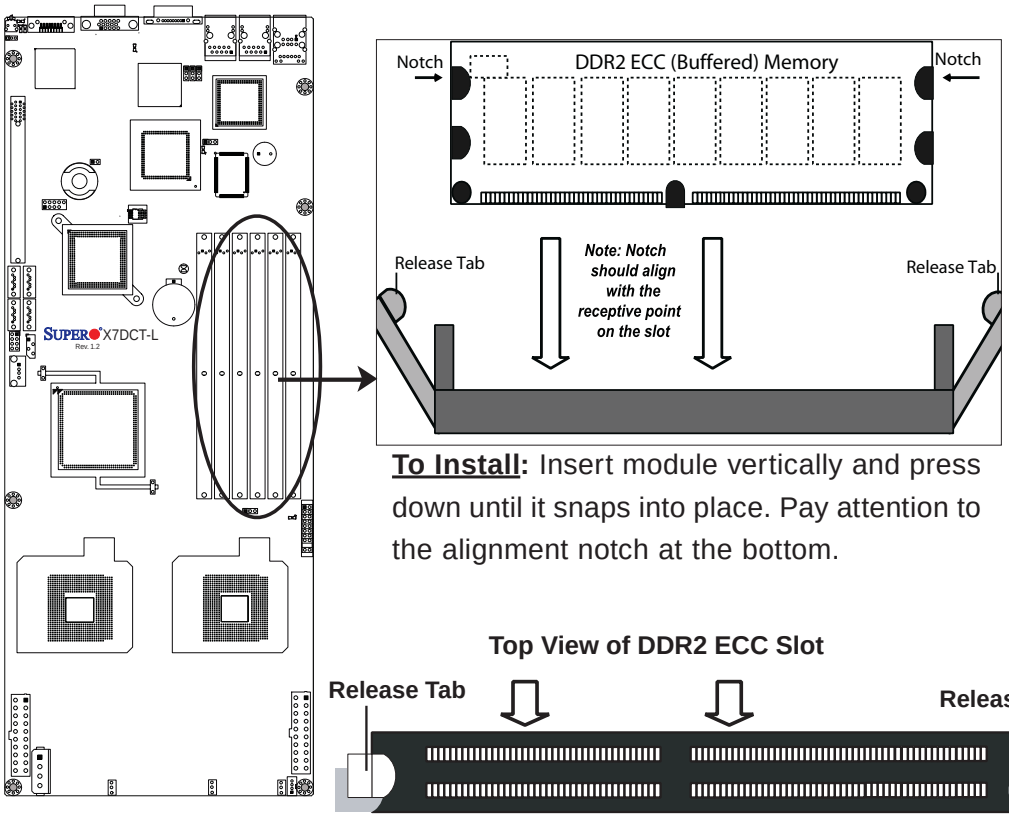
1. Due to OS limitations, some operating systems may not show more than 4 GB of memory.

2. This motherboard supports both dual-rank and single-rank memory modules. For system memory to work properly, please use all dual-rank memory modules or use all single-rank memory modules on the same motherboard. Check the Supermicro web site for other information.

3. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the following Memory Availability Table for details.

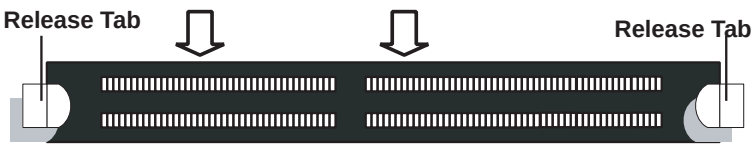
Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

Installing and Removing DIMMs



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

Top View of DDR2 ECC Slot



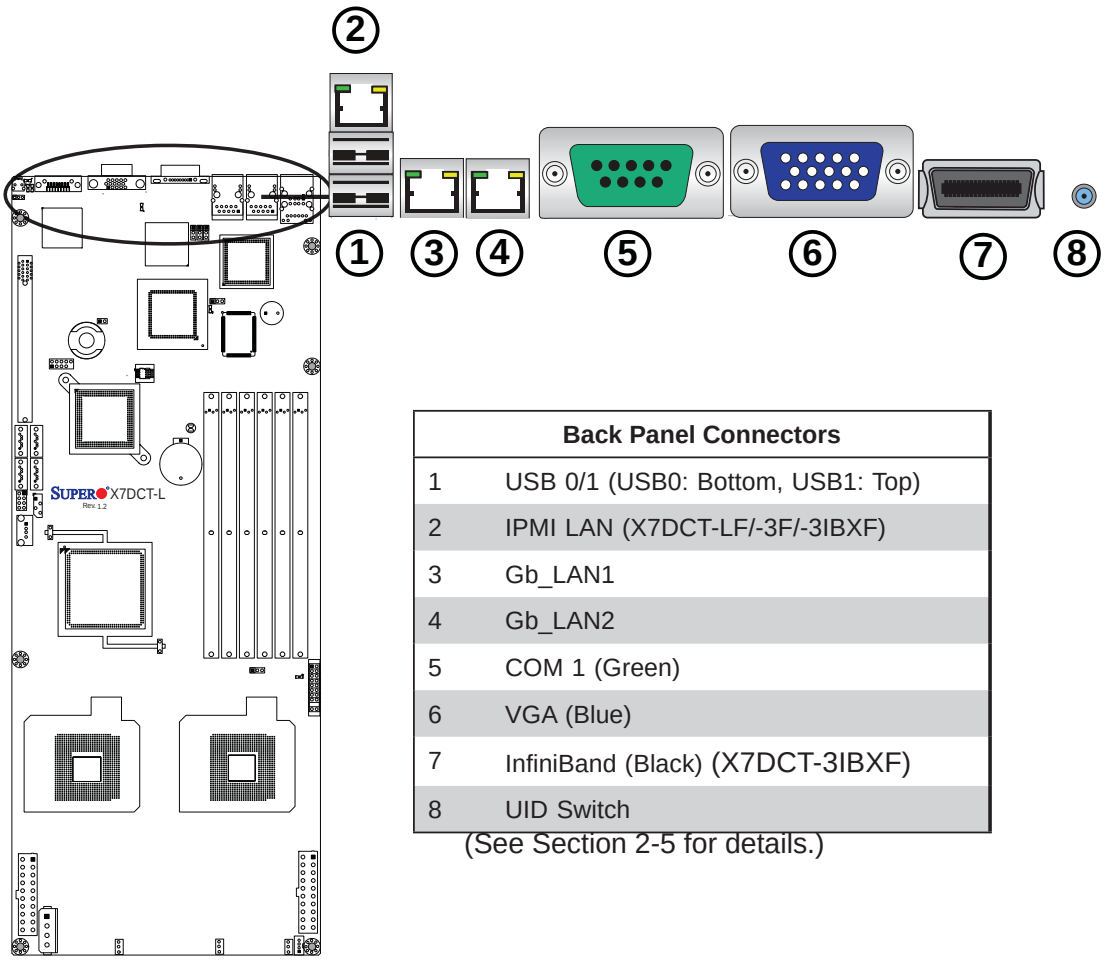
To Remove:

Use your thumbs to gently push the release tabs near both ends of the module to release it from the slot.

2-5 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the graphics below for the colors and locations of the various I/O ports.

Back Panel Connectors/IO Ports



Back Panel Connectors	
1	USB 0/1 (USB0: Bottom, USB1: Top)
2	IPMI LAN (X7DCT-LF/-3F/-3IBXF)
3	Gb_LAN1
4	Gb_LAN2
5	COM 1 (Green)
6	VGA (Blue)
7	InfiniBand (Black) (X7DCT-3IBXF)
8	UID Switch

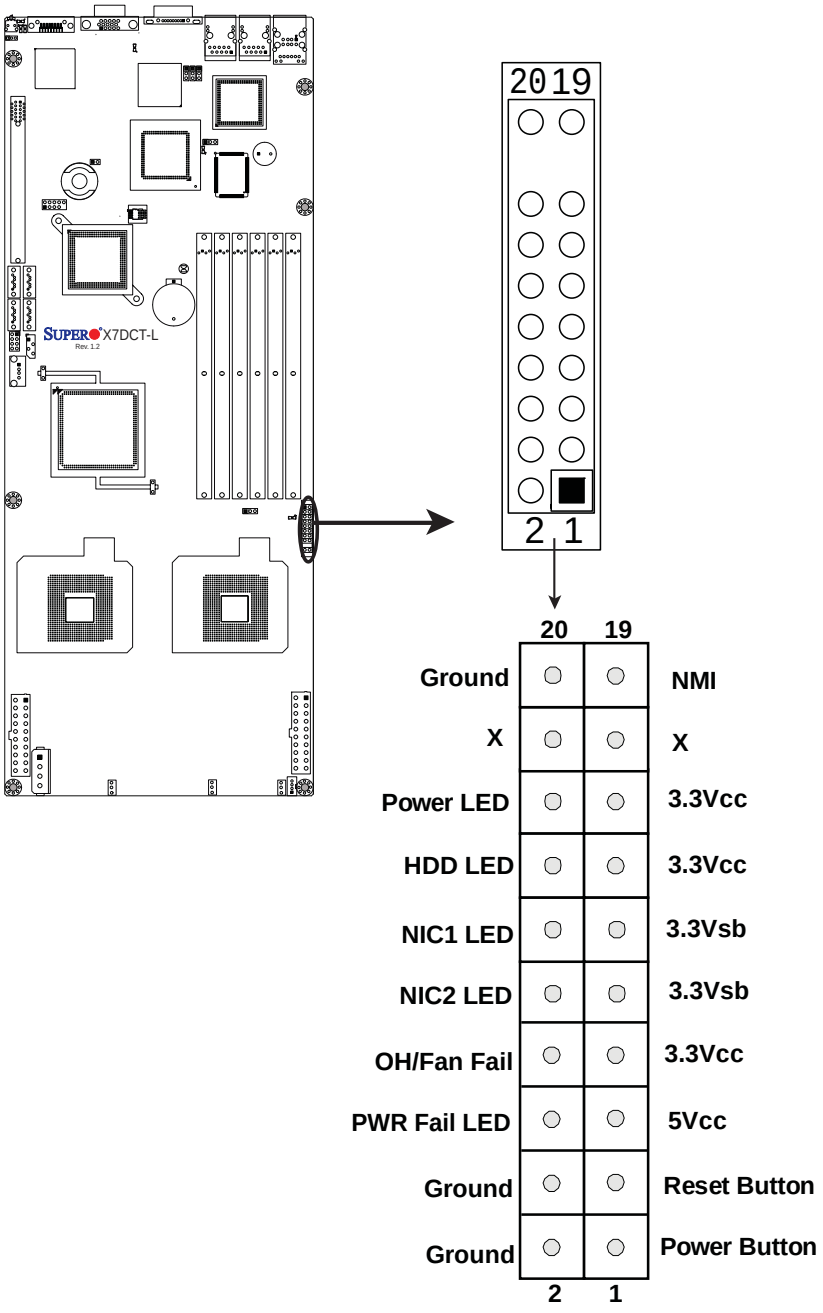
(See Section 2-5 for details.)

Back Panel I/O Port Locations and Descriptions

Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

Front Control Panel Header (JF1) Pins



Front Control Panel Pin Definitions

NMI Button

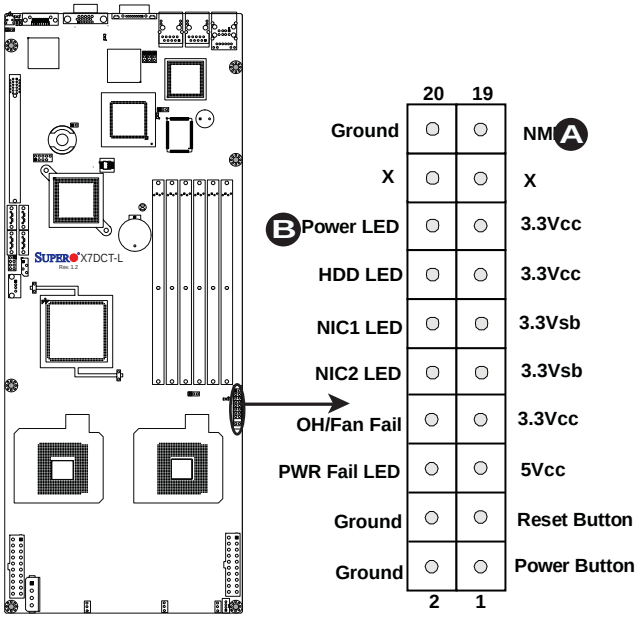
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	NMI Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3 Vcc
16	Power On Indicator



A. NMI

B. PWR LED

HDD LED

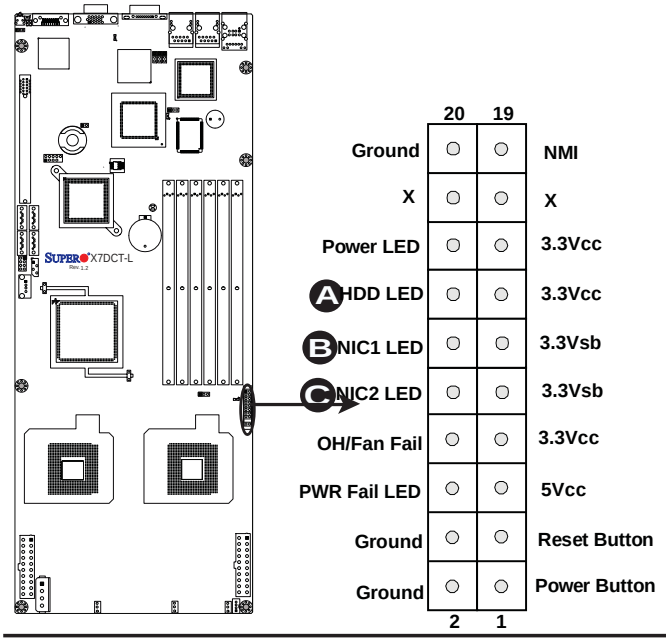
The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activity. See the table on the right for pin definitions.

HDD/UID LED Pin Definitions (JF1)	
Pin#	Definition
13	3.3 Vcc
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	3.3 Vsb
10/12	NIC Active



A. HDD LED
B. NIC1 LED
C. NIC2 LED

Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

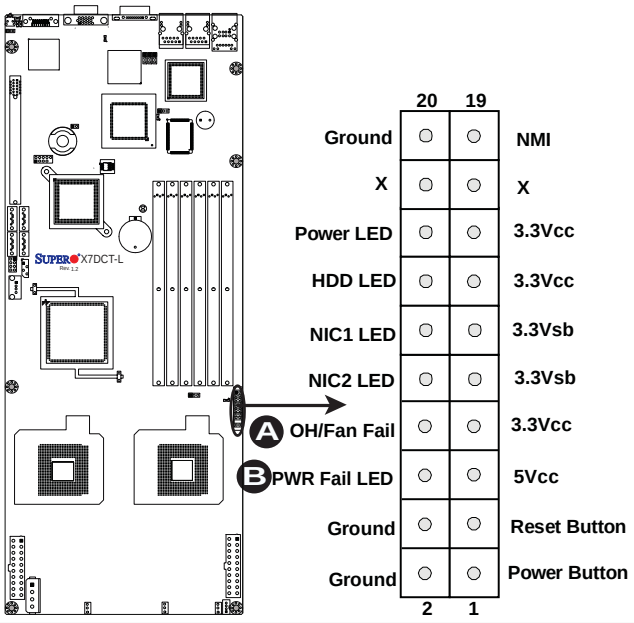
OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	3.3 Vcc
8	OH/Fan Fail LED Indicator

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	5 Vcc
6	PWR Fail Indicator



A. OH/Fan Fail LED

B. PWR Supply Fail

Reset Button

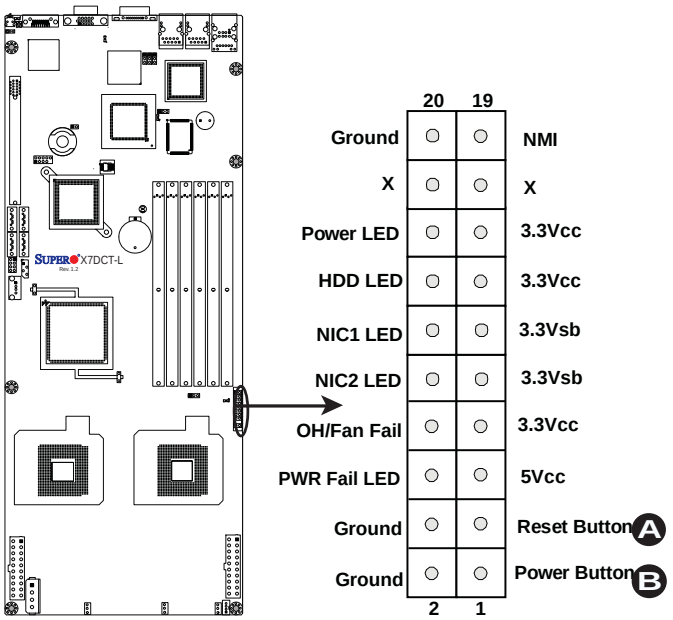
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset Signal
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PWR Button Signal
2	Ground



A. Reset Button

B. PWR Button

2-6 Connecting Cables

20-pin Proprietary Power Connectors

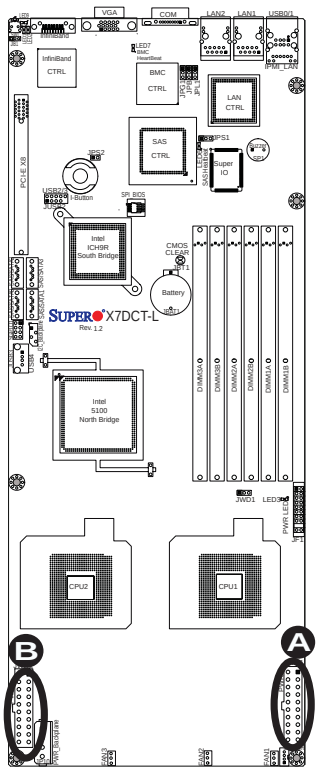
There are two 20-pin main power supply connectors (PWR1, PWR2) and a 4-pin auxiliary power connector (JP10) on the motherboard. These power connectors meet the SSI EPS 12V specification. For power supply to work properly, please follow the instructions given below. See the table on the right for pin definitions. Also refer to the layout below for the PWR connector locations.

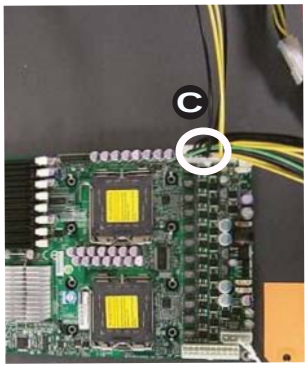
20-pin Main Power Connector Pin Definitions

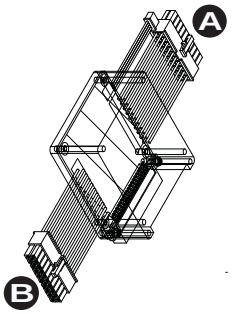
Pin#	Definition	Pin #	Definition
11	PS On	1	Ground
12	5VSB	2	Ground
13	Ground	3	Ground
14	Ground	4	Ground
15	Ground	5	Ground
16	NC2	6	NC1
17	12V	7	12V
18	12V	8	12V
19	12V	9	12V
20	12V	10	12V

Note 1: You cannot use both 20-pin power connectors: PWR1 (the right connector) and PWR2 (the left connector) as input power supply connectors at the same time. Only one connector can be used for input power supply to the motherboard at a time. For proper use of these proprietary PWR Connectors, please customize your PWR cables based on the SMC PWR Connector Pin-Out Definitions listed above.

Note 2: The black square (dot) on a power connector indicates the location of Pin 1. (See the pictures below for the power cable connections.)







A. Right 20-pin PWR connector & cable: (PWR1)

B. Left 20-pin PWR connector & cable: (PWR2)

C. 20-pin PWR Cable

4-pin Auxiliary Power Connector

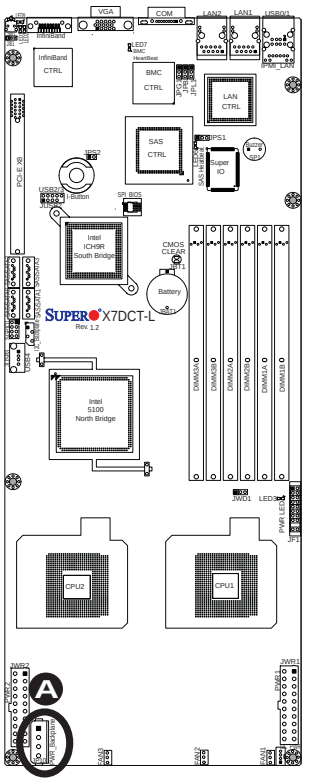
In addition to two 20-pin power connectors, a 4-pin 12V PWR supply is located at JP10 on the motherboard. This power connector is used to provide power supply to hard drive disks. Refer to the layout below for the location.

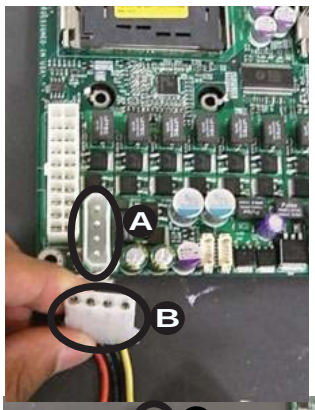
Note1: The 4-pin Auxiliary Power Connector is used for power supply output to HDDs only.

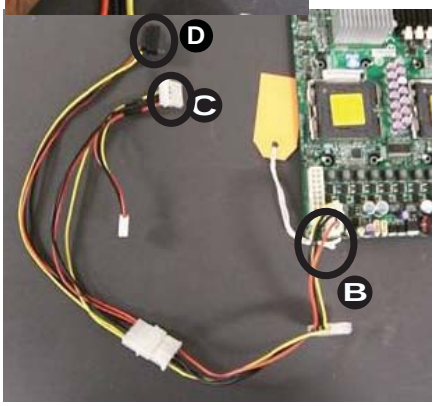
Note 2: The black square (dot) on the power connector indicates the location of Pin 1. (See the pictures below for the power cable connections.)

4-Pin Power Pin Definitions	
Pin #	Definition
1	+12V
2	Ground
3	Ground
4	+5V

Required Connection







A. 4-pin Aux. PWR

B. One Male (Receptacle) PWR Connector

C.& D. Two Female PWR Connectors

Fan Headers

The X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF has three system fan headers (Fans 1~Fan 3). All these fans are 4-pin fans. See the table on the right for pin definitions.

Note: The onboard fan speeds are controlled by Thermal Management via BIOS Hardware Monitoring in the Advanced Setting. (The default setting is **Disabled**.)

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWM

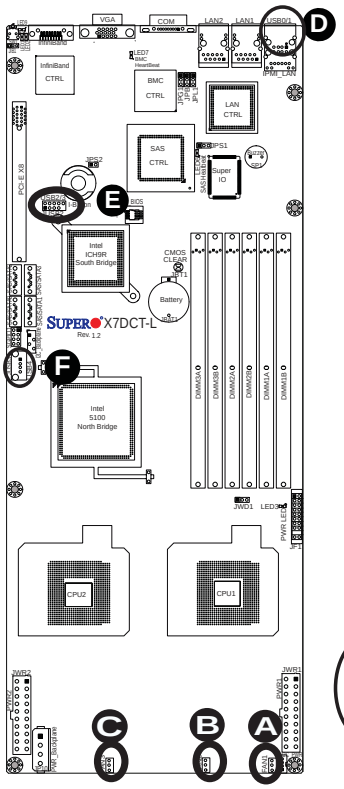
Universal Serial Bus (USB)

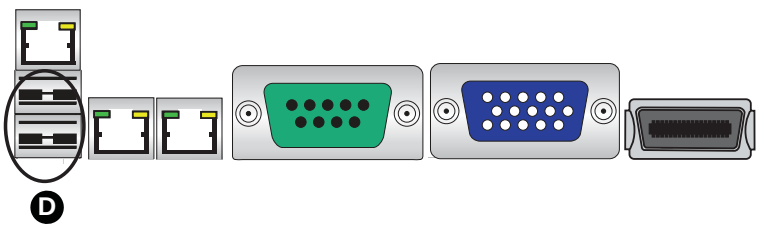
There are five USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Two of them are Back Panel USB ports: USB 0~1 (JPUSB1). (USB0 is on the bottom, USB1: on the top.) The other three are Front Panel/Embedded USB connectors: USB 2~3 (JUSB2), and USB 4 (JUSB3). See the tables on the right for pin definitions.

Back Panel USB (USB 0~1)	
Pin#	Definitions
1/5	+5V
2/6	PO-
3/7	PO+
4/8	Ground

Front Panel USB (USB 4)	
Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground

Front Panel USB Pin Definitions (USB 2~3)			
USB 2		USB 3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection





A. Fan 1

B. Fan 2

C. Fan 3

D. Backpanel USB 0~1

E. Front Panel USB 2~3

F. Front Panel USB 4

GLAN 1/2 (Giga-bit Ethernet Ports)

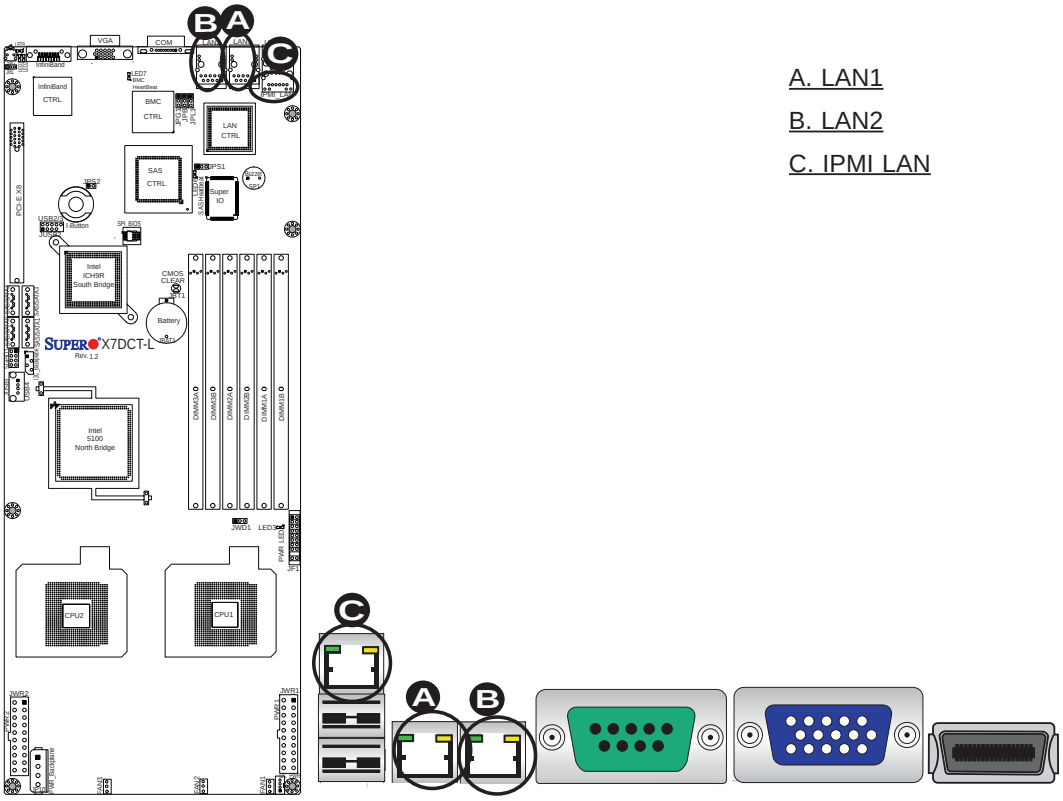
Two Gigabit Ethernet ports are located at JLAN1/JLAN2 on the I/O back-plane. These ports are supported by the Intel ICH9R chip and accept RJ45 type cables.

GLAN1/2

IPMI LAN Port (X7DCT-LF/-3F/3IBXF only)

In addition to the two Gigabit Ethernet ports are located at JLAN1/JLAN2, an additional IPMI LAN port supported by the Winbond Hermon BMC (Base-board Management Controller) chip is located on the I/O backplane. This port provides IPMI 2.0/KVM support.

IPMI LAN



A. LAN1

B. LAN2

C. IPMI LAN

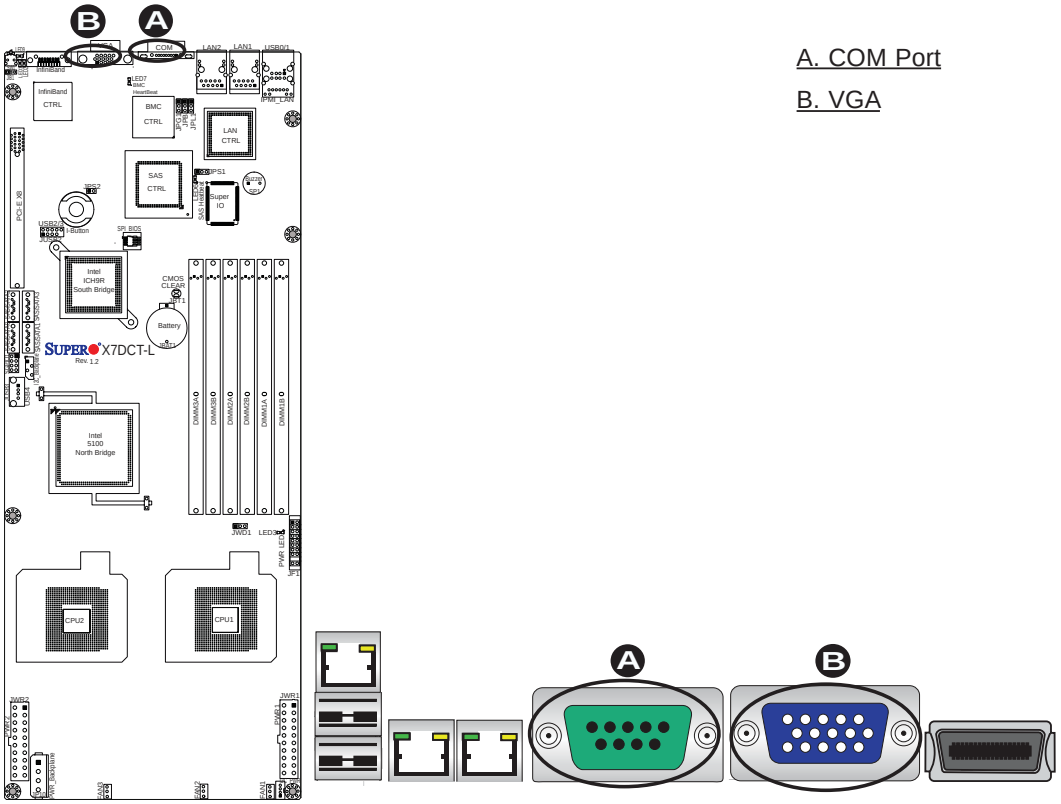
Serial Port

The onboard serial port is located on the backplane on the motherboard. See the table on the right for pin definitions.

Serial Port Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

VGA Connector

A VGA connector is located next to the COM1 port on the IO backplane. Refer to the board layout below for the location.

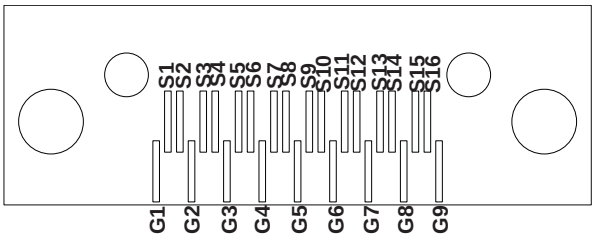


A. COM Port

B. VGA

InfiniBand Connection (X7DCT-3IBXF)

The onboard InfiniBand connector is located on the backplane on the motherboard. This switch is primarily used for High-performance computing. See the table on the right for pin definitions.



InfiniBand Pin Definitions

Pin #	Definition	Pin #	Definition
S1	Input Pair0:Pos	S9	Output Pair3:Pos
S2	Input Pair0:Neg	S10	Output Pair3:Neg
S3	Input Pair1:Pos	S11	Output Pair2:Pos
S4	Input Pair1:Neg	S12	Output Pair2:Neg
S5	Input Pair2:Pos	S13	Output Pair1:Pos
S6	Input Pair2:Neg	S14	Output Pair1:Neg
S7	Input Pair3:Pos	S15	Output Pair0:Pos
S8	Input Pair3:Neg	S16	Output Pair0:Neg

InfiniBand Ground Pins (G1~G9) Pin Definitions

Pin#	Definitions
G1~G9	Ground

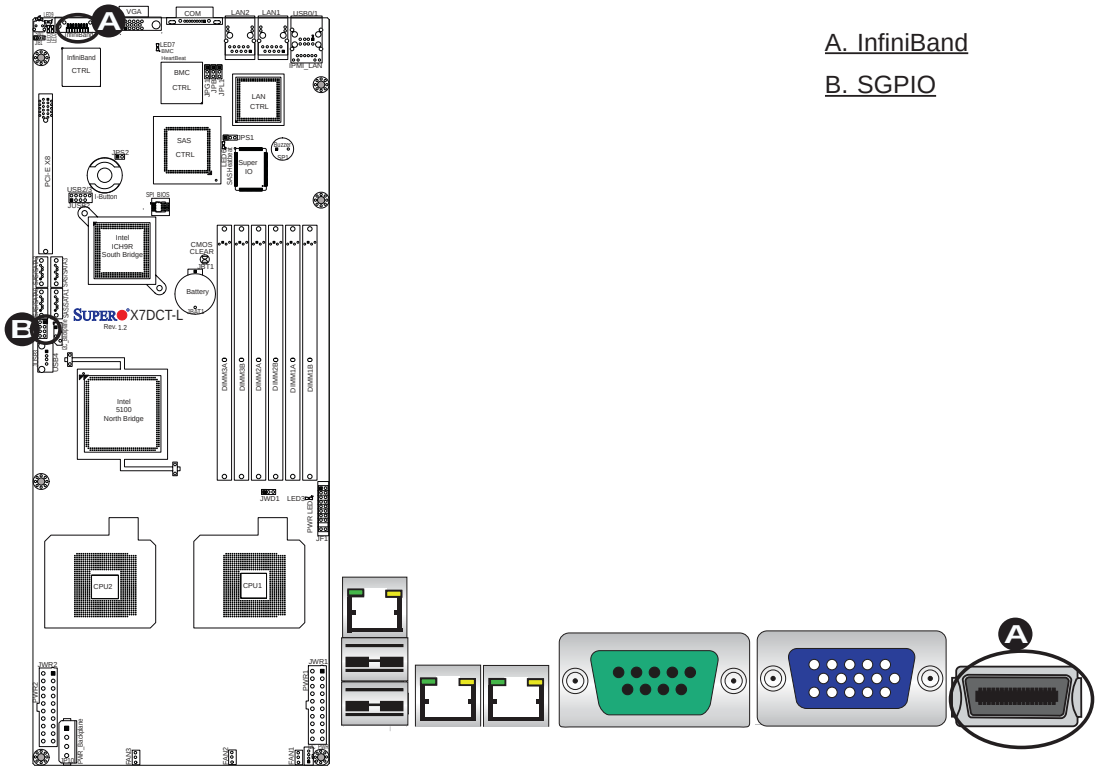
SGPIO Header

A SGPIO (Serial-Link General Purpose Input/Output) header is located next to SATA/SAS Port0 on the motherboard. This header is used to communicate with the Serial-Link System Monitoring chip on the backplane. See the table on the right for pin definitions. Refer to the board layout below for the locations of the headers.

SGPIO Pin Definitions

Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC: No Connections



A. InfiniBand

B. SGPIO

Power Supply I²C Connector

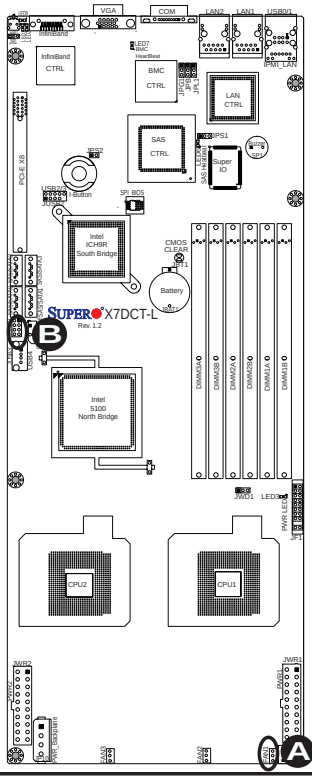
Power Supply (I²C) Connector (J17) monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR Supply I²C Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground

I²C_Backplane Connector

Backplane Power SMB(I²C) Connector (J18) monitors power supply and temperatures of backplane IO connectors. See the table on the right for pin definitions.

I²C_Backplane Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground



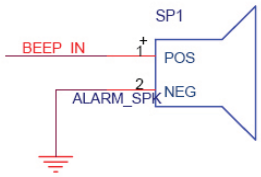
A. Power Supply I²C

B. I²C_Backplane

Internal Buzzer

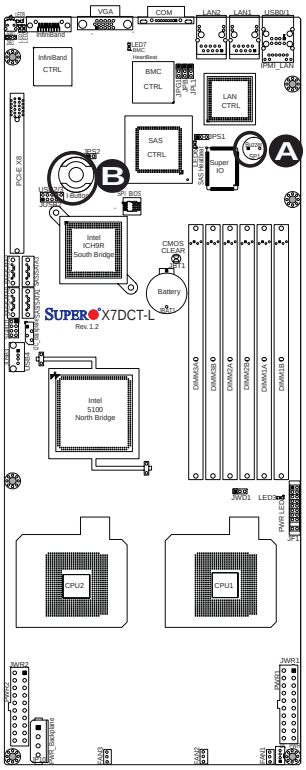
The Internal Buzzer, located at SP1, can be used to provide audible alarms for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the locations of the Internal Buzzer (SP1).

Internal Buzzer (SP1) Pin Definitions		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker



I-Button

An onboard I-Button, located next to USB Ports 2~3, is an 1-wire computer chip enclosed in a durable stainless steel can. I-Button stores instructions, provides electronic interface and allows HostRAID to operate with Mega-RAID firmware.



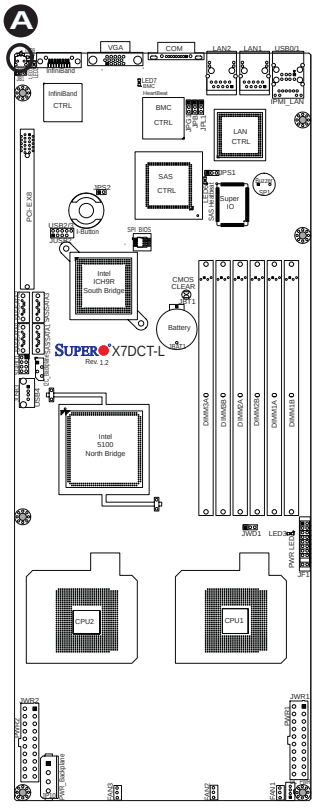
A. Internal Buzzer

B. I-Button

Unit Identification Switches

There are two Unit Identification (UID) Switches on the motherboard. The Front Panel UID Switch is connected to a pin in the Front Control Panel (JF1). The Rear UID Switch (SW1) is located next to Fan6. When you push the UID Switch on the Front Control Panel, both Rear UID and Front Panel UID Indicators will be turned on. Push the FP UID Switch or the Rear UID Switch-SW1 again to turn off both Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

UID Switch	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

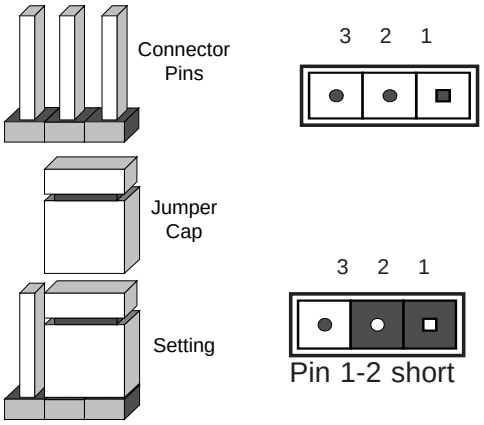


A. UID Switch

2-7 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

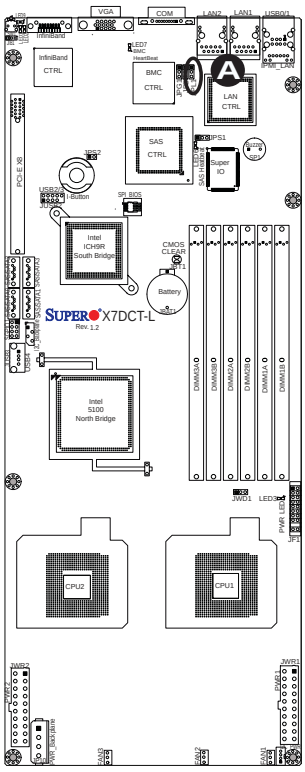


Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

GLAN Enable/Disable

Jumper JPL1 enables or disables GLAN Port1 and GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is **Enabled**.

GLAN Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled



A. GLAN 1 Enable

CMOS Clear

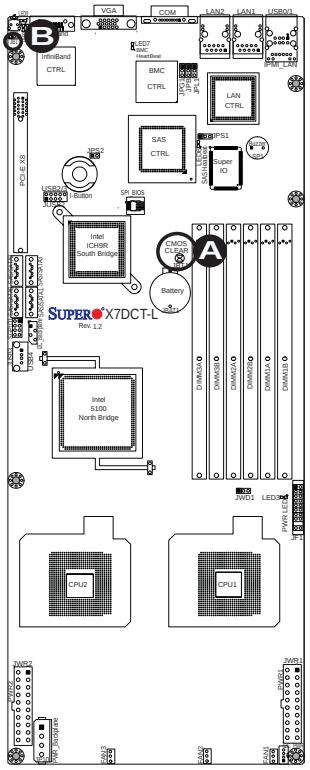
JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

InfiniBand (IB) Enable (X7DCT-3IBXF)

JIB1 allows you to enable or disable the InfiniBand connector. The default position is on pins 1 and 2 to enable the IB connection. See the table on the right for jumper settings.

IB Enable/Disable Jumper Settings	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled



A. CMOS Clear

B. IB Enable

SAS Enable/Disable (X7DCT-3/-3F/-3IBX only)

JPS1 allows the user to enable or disable SAS connections. The default position is on pins 1 and 2 to enable SAS connections. See the table on the right for jumper settings.

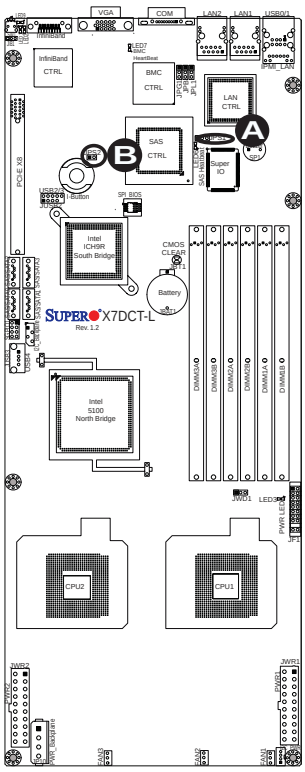
SAS Enable/Disable Jumper Settings (JPS1)	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

SAS RAID Mode Select (X7DCT-3/-3F/-3IBX only)

JPS2 allows the user to select RAID Configuration Mode. The default position is "closed" to use Software RAID (SR RAID). See the table on the right for jumper settings.

SAS RAID Mode Select Jumper Settings (JPS2)	
Both Jumpers	Definition
Open	IT RAID
Closed	Software RAID (Default)

Note: For more information on the LSI SAS MegaRAID configuration, please refer to the LSI MegaRAID User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.



A. SAS Enable

B. SAS RAID Mode Select

Watch Dog Enable/Disable

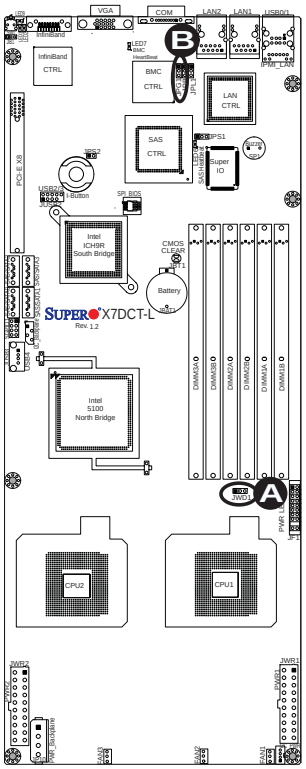
Watch Dog is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 of Jumper JWD1 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (default)
Pins 2-3	NMI
Open	Disabled

VGA Enable

JPG1 allows you to enable or disable the onboard VGA connector. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled



A. Watch Dog

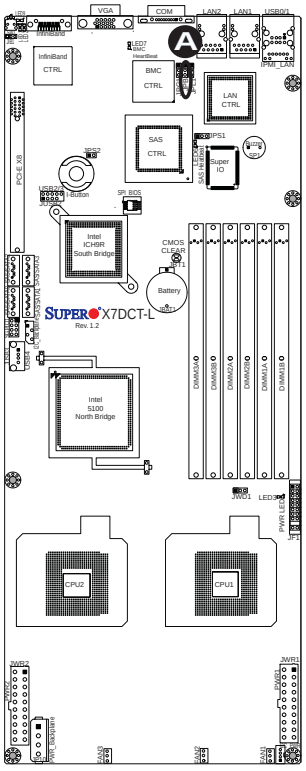
B. VGA Enable

BMC IPMI Enable (X7DCT-3IBXF)

JPB allows the user to enable or disable BMC (Baseboard Management Control) Chip and the onboard IPMI connections. This jumper is to be used together with the IPMI settings in the BIOS. If this jumper is set to Enabled, please also enable IPMI settings in the BIOS and vice versa. The default position is on pins 1 and 2 to Enable BMC. See the table on the right for jumper settings.

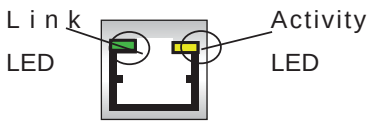
Note: For more information on IPMI configuration, please refer to the Embedded IPMI User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.

BMC IPMI Enable/Disable Jumper Settings	
Settings	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled



A. BMCEnable

2-8 Onboard Indicators



Rear View
(when viewing from the back of the chassis)

GLAN LEDs/IPMI_LAN LEDs

There are two GLAN ports and an IPMI LAN on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

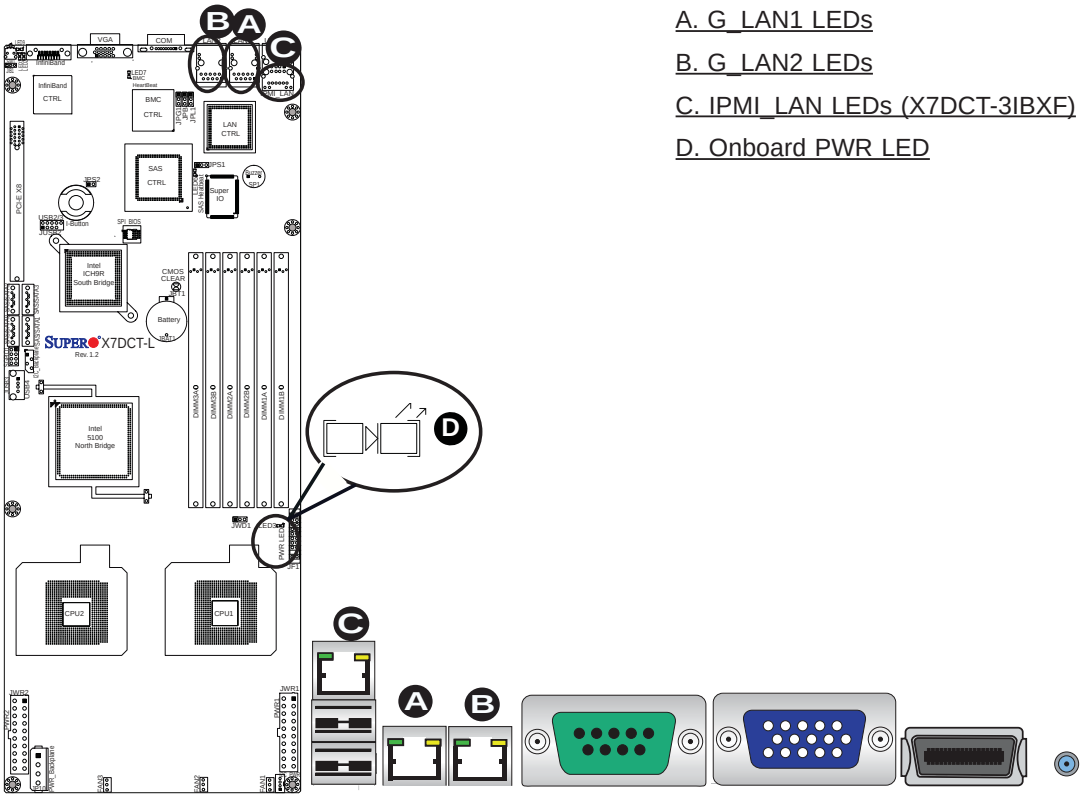
GLAN Activity Indicator (Right) LED Setting		
Color	Status	Definition
Yellow	Flashing	LAN Active

GLAN Link Indicator (Left) LED Settings	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Onboard Power LED

An Onboard Power LED is located at LED3 on the motherboard. When this LED Indicator is on, the system power is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator LED Settings	
LED Color	Definition
Off	Power Off
Green: On	Power On



A. G_LAN1 LEDs

B. G_LAN2 LEDs

C. IPMI_LAN LEDs (X7DCT-3IBXF)

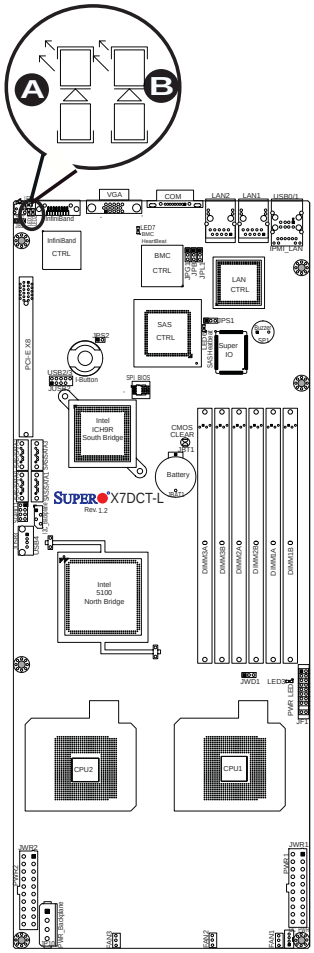
D. Onboard PWR LED

InfiniBand LED Indicators (X7DCT-3IBXF only)

Two InfiniBand LED Indicators (LED1/ LED2) are located on the motherboard. The green LED (LED1) shows the connectivity of IB; while the yellow LED (LED2) indicates activity. Refer to the table on the right for details. Also see the layout below for the LED locations.

InfiniBand Link LED (LED1) Settings		
Color	Status	Definition
Green	Solid	InfiniBand Connected
Off	Off	No connection

InfiniBand Activity LED (LED2) Settings		
Color	Status	Definition
Yellow	Solid	InfiniBand: Active
Yellow	Dim	InfiniBand: Connected, Activity: Idle
Off	Off	No connection



A. LED 1 (IB Link)

B. LED 2 (IB Activity)

SAS Heartbeat LED (X7DCT-3/-3F/3IBXF only)

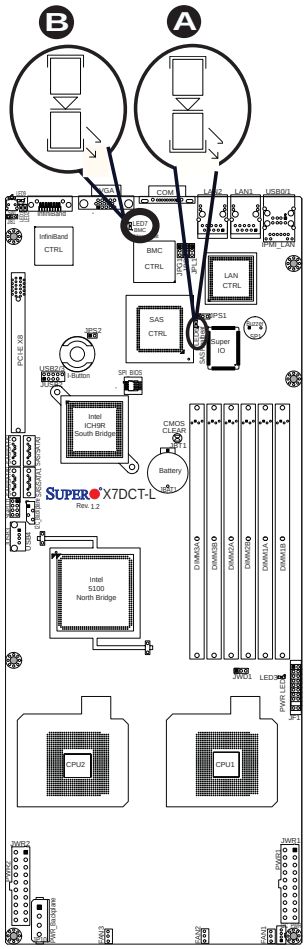
A SAS Heartbeat LED Indicator is located at LED6 on the motherboard. When this LED is blinking, SAS connections function normally. Refer to the table on the right for details. Also see the layout below for the LED location.

SAS Heartbeat LED (LED6) Settings		
Color	Status	Definition
Green	Blinking	SAS: Normal
Off	Off	Not functioning normally

BMC Heartbeat LED (X7DCT-LF/-3F/-3IBXF)

A BMC (Baseboard Management Control) Heartbeat LED Indicator is located at LED7 on the motherboard. When this LED is blinking, BMC Controller functions normally. Refer to the table on the right for details. Also see the layout below for the LED location.

BMC Heartbeat LED (LED7) Settings		
Color	Status	Definition
Green	Blinking	BMC: Normal
Off	Off	Not functioning normally



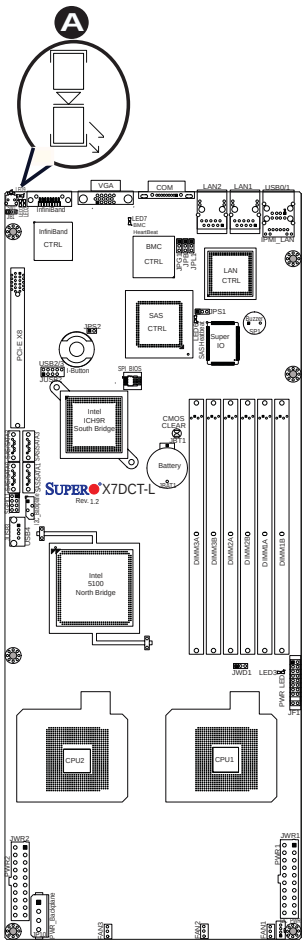
A. SAS Heartbeat LED

B. BMC Heartbeat LED

UID LED

A UID (Unit Identification) LED Indicator is located at LED9 on the motherboard. When this LED is blinking, it indicates the unit searched for is identified. Refer to the table on the right for details. Also see the layout below for the LED location.

UID LED (LED8) Settings		
Color	Status	Definition
Blue	Blinking	Unit Identified



A. UID LED

2-9 Serial_Link Connections

Note the following conditions when connecting the Serial ATA and floppy disk drive cables:

- Be sure to use the correct cable for each connector. Refer to Page 1-1 for cables that came with your shipment.
- A red mark on a wire indicates the location of pin 1.

SATA Connectors (X7DCT-L/-LF)

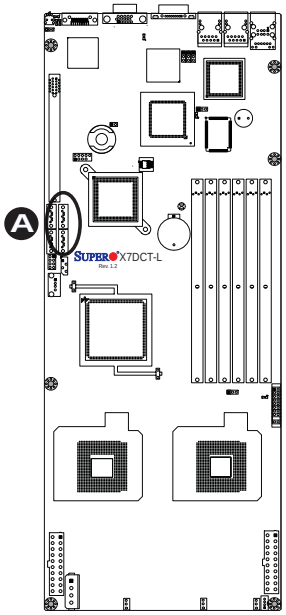
Four Serial_Link connections are configured as four Serial ATA (SATA) connectors (I-SATA 0~3) on the X7DCT-L/-LF. Serial Link connections provide faster data transmission than those of the traditional Parallel ATA. These SATA connectors are supported by the Intel ICH9R. See the table on the right for pin definitions.

SATA Connectors Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

SAS Connectors (X7DCT-3/-3F/3IBXF)

The same four Serial_Link connections indicated above are configured as SAS connectors (0~3) on the X7DCT-3/-3F/-3IBXF. These connectors provide faster data transmission than those of the traditional Parallel ATA. These SAS connectors are supported by the LSI 1064E MegaRAID Controller.

Note: For more information on the LSI SAS MegaRAID configuration, please refer to the LSI MegaRAID User's Guide posted on our website @ http://www.supermicro.com/support/manuals/.



A. SATA 0~3 (X7DCT-L/-LF)

A. SATA 0~3 (X7DCT-3/-3F/3IBXF)

Notes

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. **Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

Before Power On

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Remove all add-on cards.

3. Install a CPU in CPU Socket and connect the chassis speaker and the power LED to the motherboard. (Make sure that the CPU is properly seated. Be sure to check all jumper settings as well.)

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Make sure that all jumpers are set to their default positions.

3. Make sure that the 115V/230V switch on the power supply is properly set.

4. Turn the power switch on and off to test the system. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, and you have no video, please remove all the add-on cards and cables.

2. Use the speaker to determine if any beep codes exist. Refer to the Appendix for details on beep codes.

Losing the System's Setup Configuration

3. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Sections 1-6 and 2-6 for details on recommended power supplies.

4. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

5. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

Memory Errors

1. Make sure the DIMM modules are properly and fully installed. Check if DIMMs of different speeds or types have been installed. Also make sure that the BIOS setup is configured for the fastest speed of RAM used.

2. It is recommended to use the same RAM speed for all DIMMs in the system. Make sure you are using the correct type of DDR2 Buffered (Registered) ECC 667/533 SDRAM (*recommended by the manufacturer.)

3. Check for bad DIMM modules or slots by swapping a single module between four slots and noting the results. Make sure all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install two modules at a time, beginning with 1A and 1B, then 2A and 2B, and so on (see Section 2-3). Check the position of the 115V/230V switch on the power supply.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services.

They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our web site at http://www.supermicro.com/support/bios/.

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration
- An example of a Technical Support form is on our web site at http://www.supermicro.com/support/contact.cfm/.

Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or call: (408) 503-8000, option 2.

3-3 Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The X7DCT-L/X7DCT-LF/X7DCT-3/X7DCT-3F/X7DCT-3IBXF has six 240-pin DIMM slots that support DDR2 Registered ECC 667/533 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes. (See Chapter 2 for detailed Information.)

Question: How do I update my BIOS?

Answer: It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision and make sure that it is newer than your

BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable device or a USB pen. Run the batch file using the format flash.bat filename.rom from your bootable device or USB pen to flash the BIOS. Then, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, bootup the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

Warning: Do not shut down or reset the system while updating BIOS to prevent possible system boot failure!

Note: The onboard SPI BIOS chip is not removable. To repair or replace the SPI BIOS chip, please return your motherboard to RMA Dept. at Supermicro for service.

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for the Windows OS, and security and audio drivers.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

This warranty only covers normal consumer use and does not cover damage incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4

BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DCT-L/X7DCT-3/X7DCT-IBX/X7DCT-3IBX. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. When the computer is powered on, the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

4-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section although the screen display is often all you need to understand how to set the options as shown on the following page.

When you first power on the computer, the Phoenix BIOS Setup utility is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

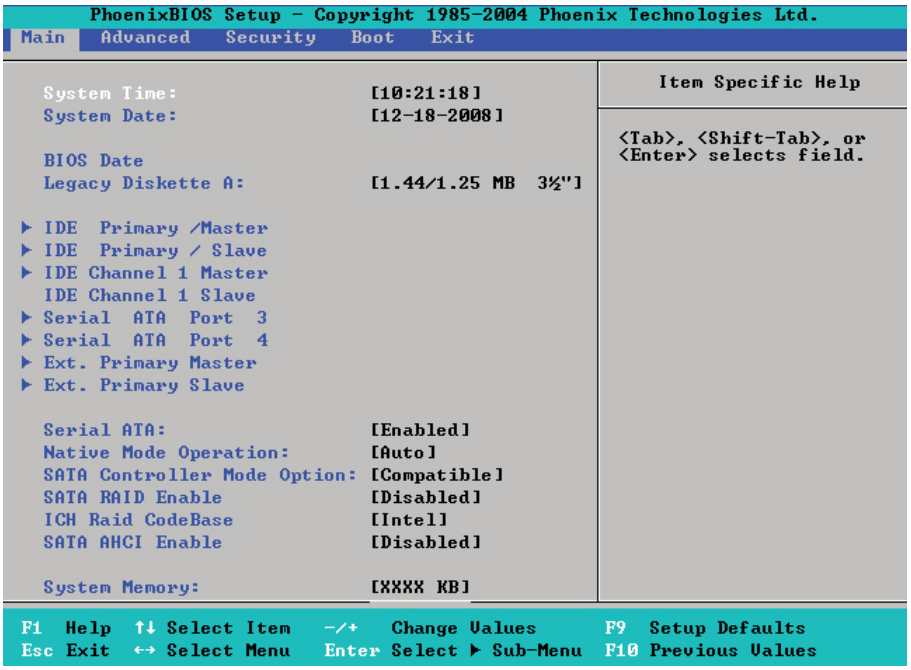
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move between the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [10:21:18]
System Date: [12-18-2008]
BIOS Date
Legacy Diskette A: [1.44/1.25 MB 3½"]
▶ IDE Primary /Master
▶ IDE Primary / Slave
▶ IDE Channel 1 Master
IDE Channel 1 Slave
▶ Serial ATA Port 3
▶ Serial ATA Port 4
▶ Ext. Primary Master
▶ Ext. Primary Slave
Serial ATA: [Enabled]
Native Mode Operation: [Auto]
SATA Controller Mode Option: [Compatible]
SATA RAID Enable [Disabled]
ICH Raid CodeBase [Intel]
SATA AHCI Enable [Disabled]
System Memory: [XXXX KB]
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

This field displays the date when this version of BIOS was built.

▶SATA Port 0/SATA Port 1/SATA Port 2/SATA Port 3

These settings allow the user to set the parameters for the slots indicated above. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of IDE hard drive. Select **Auto** to allow the BIOS to automatically configure the parameters of the SATA drive installed at the connection. Select User to allow the user to enter the parameters of the SATA drive installed. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

LBA Format

The following items will be displayed by the BIOS:

Total Sectors: This item displays the number of total sectors available in the LBA Format.

Maximum Capacity: This item displays the maximum capacity in the LBA Format.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are Disabled, 4 Sectors, 8 Sectors, and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Primary Master Device via the LBA mode. The options are Enabled and **Disabled**.

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to configure the Ultra DMA Mode setting. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

Select the native mode for ATA. The options are: Serial ATA, and **Auto**.

SATA Controller Mode Option

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the

Native IDE Mode. (**Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.)**

When the SATA Controller Mode is set to Enhanced, the following items will display:

Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to use the Intel or Adaptec Host RAID firmware. If this item is set to Disabled, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

ICH RAID Code Base

Select Intel to enable the Intel SATA RAID utility. Select Adaptec to use the Adaptec HostRAID utility. The options are **Intel** and Adaptec**.**

SATA AHCI Enable

Select Enable to enable the feature of SATA Advanced Host Interface. (Take caution when using this feature. This is for advanced programmers only. The options are Enabled and **Disabled**.)

System Memory

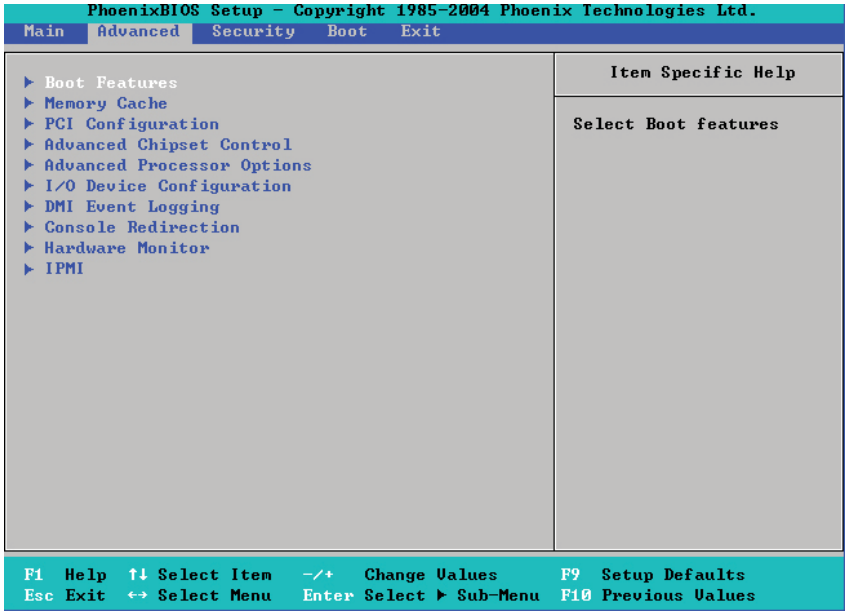
This item informs you how much system memory is detected by the BIOS.

Extended Memory

This item informs you how much extended memory in the system is detected by the BIOS.

4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility menu with the arrow keys. You should see the following display. The items with a triangle beside them have submenus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following items.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

QuietBoot Mode

This setting allows the user to **Enable** the graphic logo screen during bootup. The settings are **Enabled** and Disabled

POST Errors

Set to **Enabled** to display a POST (Power-On-Self-Test) Error Message if an error occurs during bootup. If set to Disabled, the system will continue to boot without displaying any error message even when a boot error occurs. The options are **Enabled** and Disabled.

ACPI Mode

Use the setting to determine if you want to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec. Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **instant-off** and 4-sec override.

Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

Power Loss Control

This setting allows you to choose how the system will react when the system power resumes after an unexpected loss of power. The options are Stay Off, Power On, and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than a predefined time period. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration at bootup.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable the function and reserve this area for the Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable the function and reserve this area for the Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature allows the data stored in the base memory area of block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature allows the data stored in the memory area of 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2 or L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the system memory to speed up CPU's operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Extended Memory Area

If enabled, this feature allows the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

Onboard GLAN1 (Gigabit- LAN)/Onboard GLAN2 OPROM Configure

Select Enabled to allow the system to boot from GLAN1 connection or GLAN2 connection. The default setting is **Disabled**.

Default Primary Video Adapter

This feature allows the user to specify which video adapter to be used as the default primary video adapter. The options are Other and **Onboard Video**.

Reset Configuration Data

If set to Yes, this item clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

▶ PCI-Exp x8

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: Other. If a drive fails after a new software is installed, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

Large Disk Access Mode

This setting defines the area in a hard drive that can be accessed by the user. The options are **DOS** or Other (for Unix, Novelle NetWare and other operating systems).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take caution when changing the Advanced settings. An Incorrect value, timing or a very high DRAM frequency may cause system instability. When this occurs, reset the setting to the default setting.

Accelerate MRC

Select Disable to skip Memory Reference Code (MRC) processing at bootup if there is no change to DIMM population. The options are Enabled and **Disabled**.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Crystal Beach Configuration Enable

Select Enabled to use the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (**Note**: A TOE device is a specialized, dedicated processor installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the Intel ICH9 South Bridge chip.) The options are **Enabled** and Disabled.

SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

4GB PCI Hole Granularity

This feature allows you to select the granularity of a PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

Channel 0 Rank Sparing/Channel 1 Rank Sparing

Select Enable to enable memory sparing for Memory Bus Branch 0 or Branch 1. The options are Enabled and **Disabled**.

Enhanced x8 Detection

Select **Enabled** to enable the BIOS to detect errors on Enhanced x8 DRAM UC memory modules. The options are Disabled and **Enabled**.

Demand Scrub

Scrubbing is a process that allows the North Bridge to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

Patrol Scrub

Scrubbing is a process that allows the North Bridge to correct correctable memory errors detected on a memory module, and send the correction to the requestor (the original source). When this item is set to **Enabled,** the North Bridge will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the North Bridge will be scrubbed every day. The options are **Enabled** and Disabled.

Enable Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No.**

USB Host Controller 1/ USB Host Controller 2

Select Enabled to activate the USB Host Controllers. The settings are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default,** x6, x7, x8, and x9.

Core Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Thermal Management 2 (Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via the CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

C1 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (**Note:** please refer to Intel's web site for detailed information.)

Execute Disable Bit (Available when supported by the CPU and the OS.)

Set to **Enabled** to enable Execute Disable Bit and allow the processor to classify areas in the memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack. **Note**: this feature is available when your OS and your CPU support the function of Execute Disable Bit. The options are Disabled and **Enabled**. For more information, please refer to Intel's and Microsoft's web sites.

Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

Hardware Prefetcher (Available when supported by the CPU.)

Set to this option to Enabled to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

Intel <R> Virtualization Technology (Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology and allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. **Note:** If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Intel EIST Support (Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. Please refer to Intel's web site for detailed information.

▶CPU Cache Control

DCU Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

IP Prefetch (Available when supported by the CPU.)

Select Enabled to use CPU Cache Line IP Prefetch. The options are Disabled and **Enabled**.

Direct Cache Access (Available when supported by the CPU.)

Set to Enable to route inbound network IO traffic directly into processor caches to reduce memory latency and improve network performance. The options are **Disabled** and Enabled.

DCA Delay Clocks (Available when supported by the CPU.)

This feature allows the user to set the clock delay setting from snoop to prefetch for Direct Cache Access. Select a setting from 8 (bus cycles) to 120 (bus cycles) (in 8-cycle increment). The default setting is **32 (bus cycles)**.

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

Serial Port A

This setting allows the user to decide if Serial Port A should be controlled by the BIOS or by the OS. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. The options are COM A, COM B and **Disabled**.

Note: The default setting for the X7DCT-LF/-3F/-3IBXF is set to **Onboard IPMI** when the BMC Controller is installed on the motherboard and the item-Exit Saving Changes in the Exit menu has been selected.

BAUD Rate

This item allows you to set the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to set console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

Select on to continue with console redirection after the POST routine. The options are On and **Off**.

Note: The default setting for the X7DCT-LF/-3F/-3IBXF is set to **On** when the BMC Controller is installed on the motherboard and the item-Exit Saving Changes in the Exit menu has been selected.

▶Hardware Monitoring

CPU Temperature Threshold

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU overheat alarm will be activated to provide warnings of possible CPU overheat. The options are Tcontrol, **Tcontrol+5^0 C**, and Tcontrol+10^0 C.

Highlight this and hit <Enter> to see the display of the following items:

CPU1 Temperature/CPU2 Temperature/System Temperature

Fan1-Fan3:

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative.The fan speed is controlled by Pulse Width Modulation (PWM). Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disable to disable fan speed control and allow the onboard fans to constantly run at full speed (12V). The Options are: 1. **Full-Speed at 12V**, 2. Optimized Server (w/4-pin), and 3. Optimized Workstation (w/4-pin).

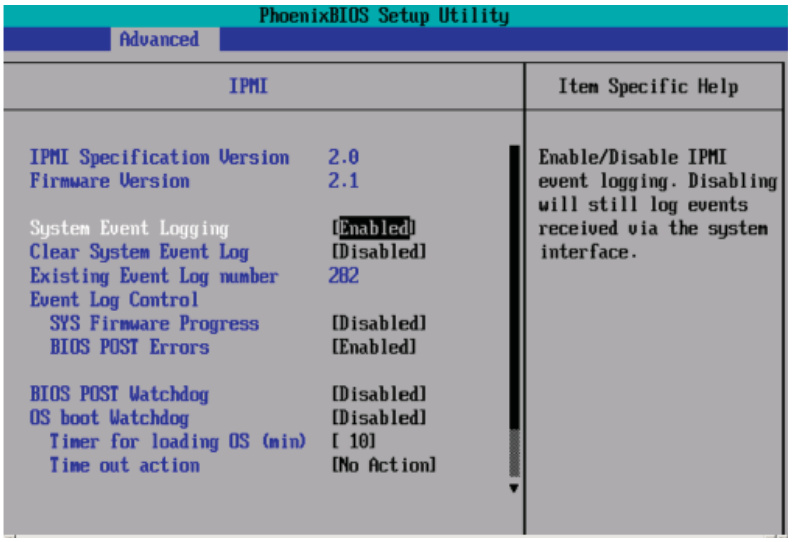
Voltage Monitoring

The following items will be monitored and displayed:

VcoreA, VcoreB, 12V, 1.8V, 5V, +3.3V, +3.3Vsb, and Vbatt.

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

▶IPMI (The option is available only when an IPMI card is installed in the system available for X7DCT-LF/3F/IBXF Only)


PhoenixBIOS Setup Utility
Advanced
IPMI
Item Specific Help
IPMI Specification Version 2.0
Firmware Version 2.1
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 282
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
BIOS POST Watchdog [Disabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [10]
Time out action [No Action]
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.

IPMI Specification Version: This item displays the current IPMI Version.

Firmware Version: This item displays the current Firmware Version.

System Event Logging

Select **Enabled** to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enable this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enable this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enable this function to log POST errors. The options are **Enabled** and Disabled.

BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Disabled**.

OS Boot Watch Dog

Select Enabled to enable the function of OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

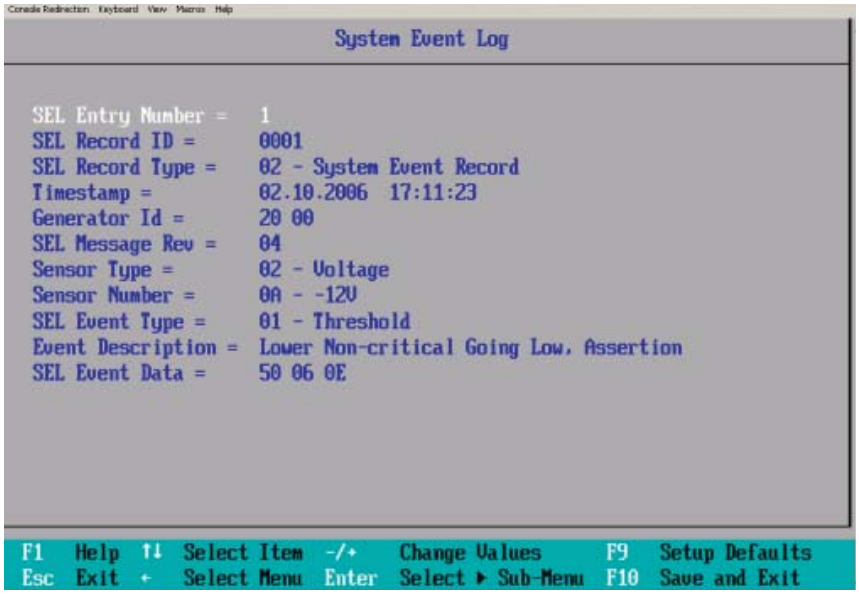
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is **10** (minutes.) (Please ignore this option when OS Boot Watch Dog is set to Disabled.)

Time Out Action

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

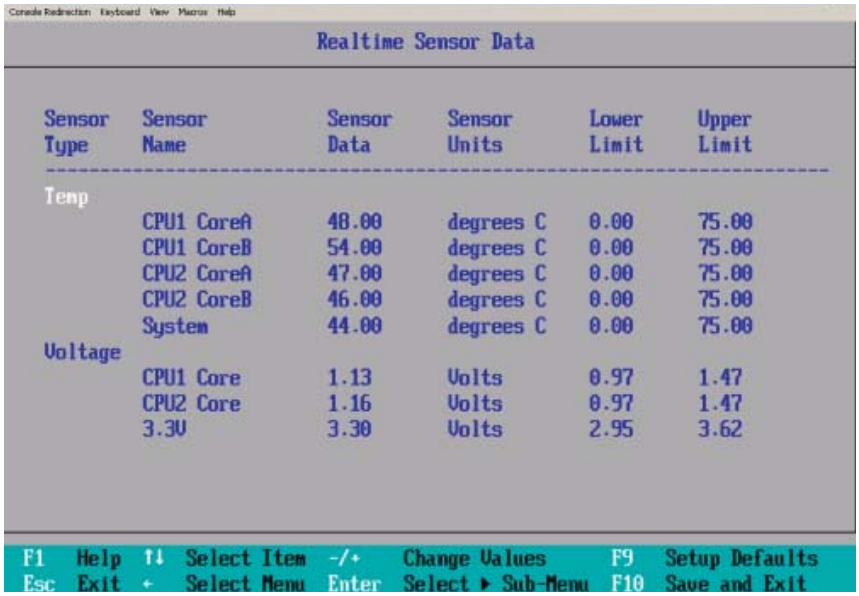
▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.


System Event Log
SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 02.10.2006 17:11:23
Generator Id = 20 00
SEL Message Rev = 04
Sensor Type = 02 - Voltage
Sensor Number = 0A - -12V
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 06 0E
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

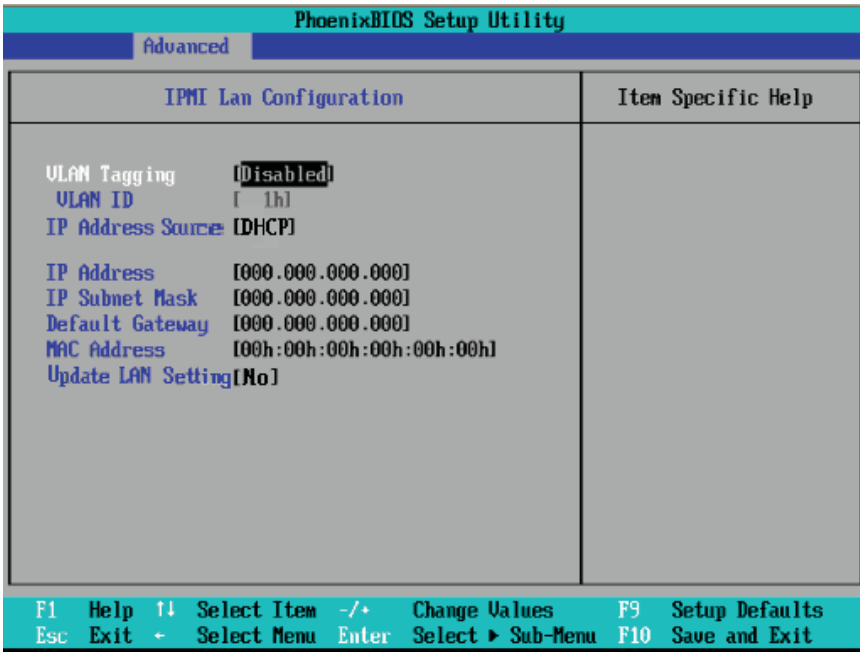
▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


Realtime Sensor Data
Sensor Type
Sensor Name
Sensor Data
Sensor Units
Lower Limit
Upper Limit
Temp
CPU1 CoreA 48.00 degrees C 0.00 75.00
CPU1 CoreB 54.00 degrees C 0.00 75.00
CPU2 CoreA 47.00 degrees C 0.00 75.00
CPU2 CoreB 46.00 degrees C 0.00 75.00
System 44.00 degrees C 0.00 75.00
Voltage
CPU1 Core 1.13 Volts 0.97 1.47
CPU2 Core 1.16 Volts 0.97 1.47
3.3V 3.30 Volts 2.95 3.62
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶IPMI LAN Configuration

The following features allow the user to configure and monitor IPMI LAN settings.


PhoenixBIOS Setup Utility
Advanced
IPMI Lan Configuration
Item Specific Help
VLAN Tagging [Disabled]
VLAN ID [1h]
IP Address Source [DHCP]
IP Address [000.000.000.000]
IP Subnet Mask [000.000.000.000]
Default Gateway [000.000.000.000]
MAC Address [00h:00h:00h:00h:00h:00h]
Update LAN Setting [No]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

VLAN Tagging

Select Enabled to enable Virtual LAN(s) for IPMI connections and allow the user to configure VLAN settings. The options are Enabled and **Disabled**.

VLAN ID

If VLAN Tagging above is set to Enabled, this item allows the user to change the VLAN ID. If VLAN Tagging is disabled, this item will be ignored by the firmware.

IP Address Source

This item allows the user to select the IP address source for the connection. The options are **DHCP** and Static.

IP Address

This item displays the IP address for the IPMI connection detected.

IP Subnet Mask

This item displays the IP Subnet Mask for the IPMI connection detected.

Default Gateway

This item displays the Default Gateway for the IPMI connection detected.

MAC Address

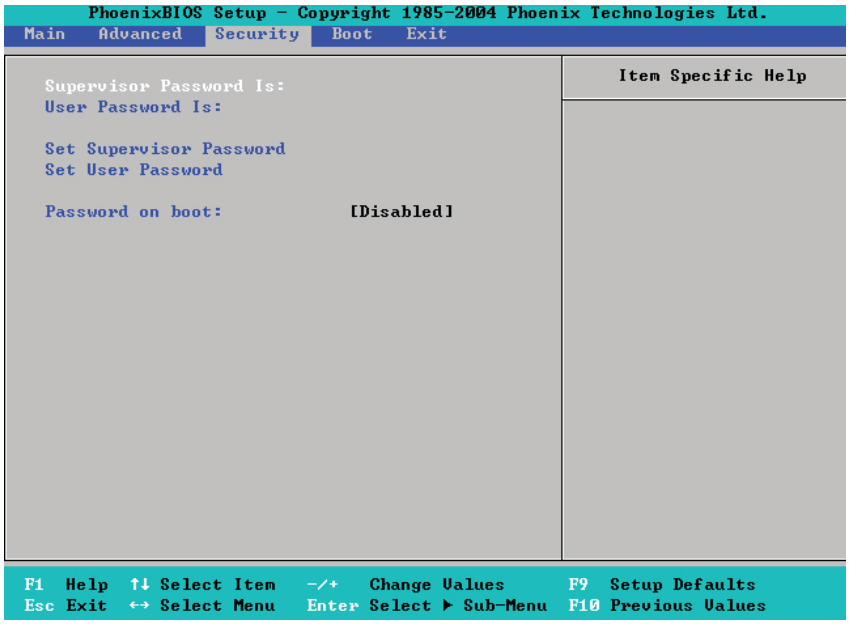
This item displays the MAC Address for the IPMI connection detected.

Update LAN Settings

Select Yes to allow BIOS update LAN setting. The options are Yes and **No**.

4-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Supervisor Password Is:
User Password Is:
Set Supervisor Password
Set User Password
Password on boot: [Disabled]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Supervisor Password Is:

This feature indicates if a supervisor password has been entered into the system. Clear means such a password has not been used, and Set means a supervisor password has been entered.

User Password Is:

This feature indicates if a user password has been entered into the system. Clear means such a password has not been used, and Set means a user password has been entered.

Set Supervisor Password

When the item Set "Supervisor Password" is highlighted, hit the <Enter> key. When prompted,enter the Supervisor's password in the dialogue box to set or to change supervisor's password which will allow the user to access the BIOS with the privilege as a supervisor.

Set User Password

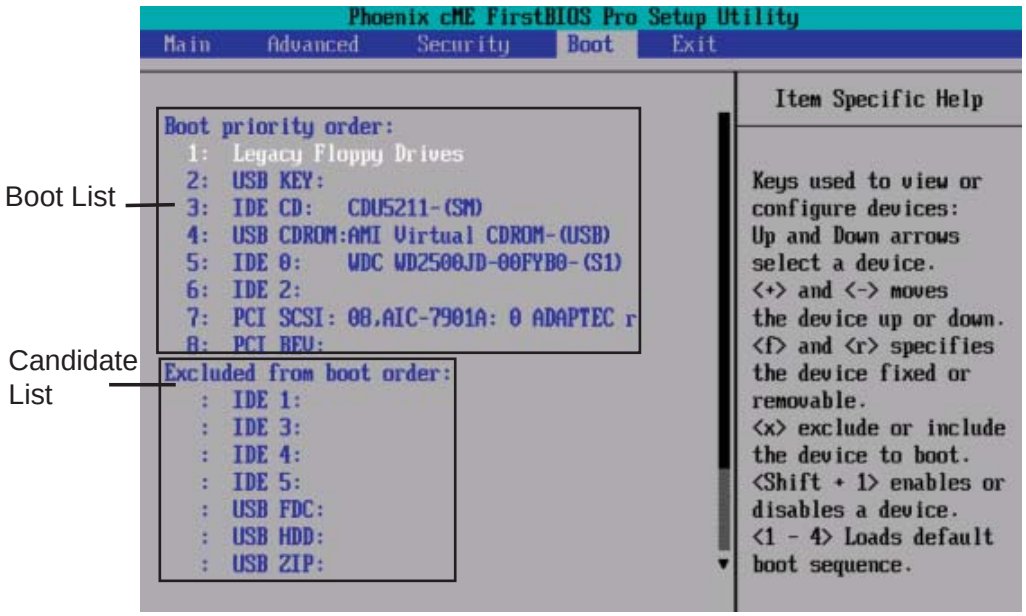
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, enter the user's password in the dialogue box to set or to change the user's password, which allows the user to access the system at bootup.

Password on Boot

This setting allows you to determine if a password is required for a user to enter the system at system boot. The options are Enabled (password required) and **Disabled** (password not required).

4-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specifications of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.



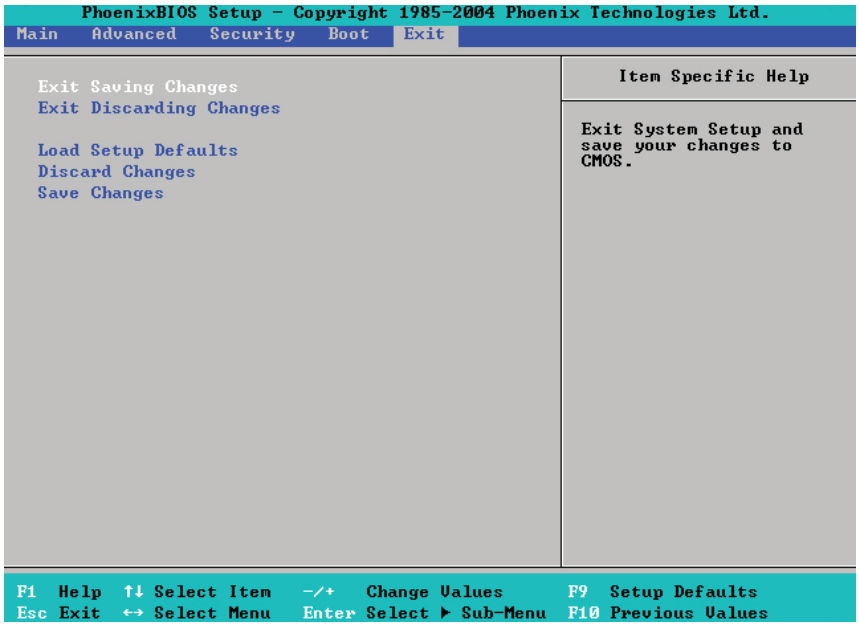
(The picture shown above is for reference only. Your screen may appear differently; it depends on the devices installed in your system.)

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes
Item Specific Help
Exit System Setup and save your changes to CMOS.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you have made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you have made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Appendix A

BIOS POST Error Codes

This section lists Recoverable POST (Power On Self Test) Error codes for the Phoenix BIOS.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with Front Panel Overheat LED on - system overheat

Notes

Appendix B

Installing the Windows OS

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

Note: The Windows 2000 OS is not supported by the Intel ICH9R HostRAID Driver.

B-1 Installing the Windows XP/2003 OS for Systems with RAID Functions

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"Intel AA RAID XP/2003 Driver for ICH9R" into Drive A: and press the <Enter> key.

5. Choose the Intel(R) ICH9R SATA RAID Controller from the list indicated in the XP/2003 Setup Screen, and press the <Enter> key.

6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

7. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2003 installation.

8. After the Windows XP/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows XP/2003 OS for Systems without RAID Functions

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Continue with the OS installation. The Windows OS Setup screen will display.

3. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then continue with the Windows XP/2003 installation.

4. After the Windows XP/2003 OS Installation is completed, the system will automatically reboot.

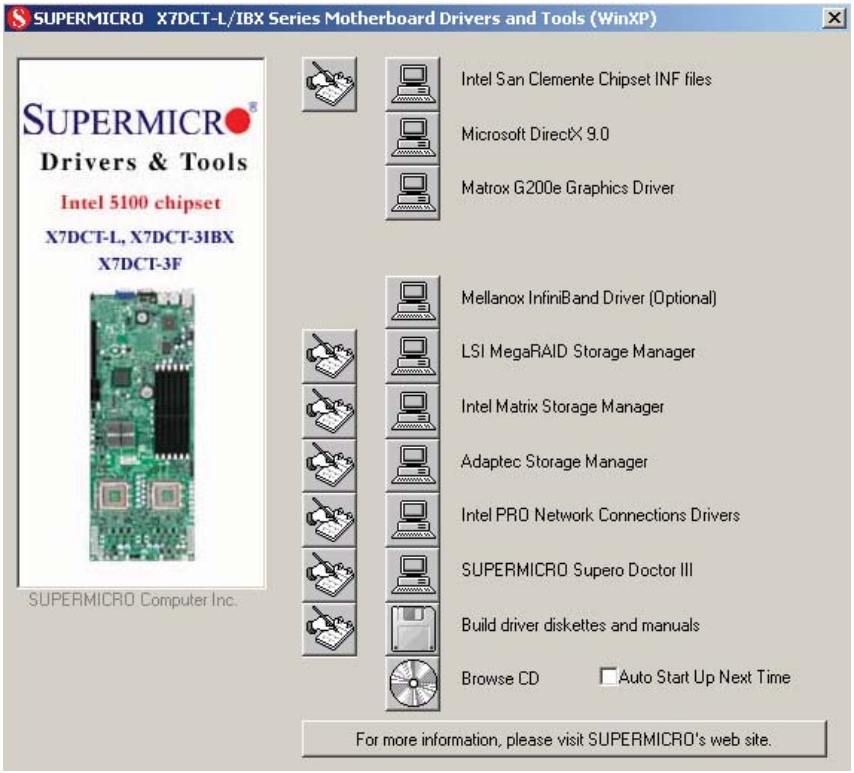
5. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen as shown on Page C-1 will display. Follow the instructions given in Appendix C to install other software programs and drivers.

Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Other Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



Driver/Tool Installation Display Screen

Note:

Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon on the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.**

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperatures, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note 1: Both default username and password are **ADMIN**.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. | Health Info. | Performance | Remote Control | Configuration | Administration | Systems Management | Report | Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: SD III Software can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For the Linux OS, we will still recommend that you use Supero Doctor II.

Notes

(Disclaimer Continued)

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